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THE PSYCHOLOGICAL CLINIC

*A Journal of Orthogenics
For the Normal Development
of Every Child* 15787

Psychology

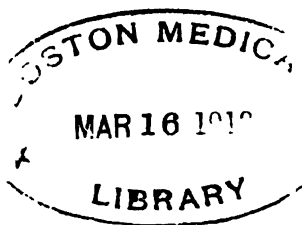
Hygiene

Education

Editor:
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VOLUME XI.
1917-1918

THE PSYCHOLOGICAL CLINIC PRESS
PHILADELPHIA, PA.



Orthogenics concerns itself primarily with the causes and treatment of retardation and deviation, but it is by definition the science of normal development, and comprehends within its scope all the conditions which facilitate, conserve, or obstruct the normal development of mind and body.

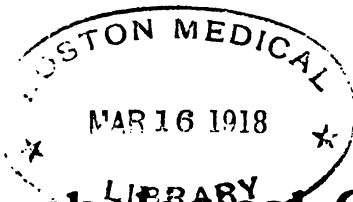
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The Psychological Clinic

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VOL. XI, No. 1

MARCH 15, 1917

ORTHOGENIC CASES.¹

XI. A PSEUDO-TALENT FOR WORDS—THE TEACHER'S REPORT TO DR. WITMER.

BY SARAH WARFIELD PARKER, M.A.
Philadelphia, Pa.

"In my harem, in my harem!
There's Rosie, Posie, Josie."

I stopped on the stairs and listened to a high, childish voice beating out the measures with exaggerated accent.

"And there never was a minute
King Solomon wasn't in it."

I turned on the landing and saw a dark, undersized little fellow shuffling, circling about the room with the crude rhythmic jerk of knee and hand which enlivens our vaudeville stage.

"Wise for breakfast, wise for dinner,
And wise for supper time;
Lots of fancy dances,
And it doesn't cost a dime."

He stopped with a laugh of sheer delight in the rhyme of time and dime.

I looked at Gordon. If I had not known that on his next birthday he would be ten, I should have judged him no more than

¹ The following reports of Cases treated by the Orthogenic Method, have appeared:

- I. A Case of Chronic Bad Spelling. Lightner Witmer. Vol. 1, p. 53.
- II. The Fifteen Months' Training of a Feeble-minded Child. Lightner Witmer. Vol. 1, p. 69.
- III. Retardation through Neglect in Children of the Rich. Lightner Witmer. Vol. 1, p. 157.
- IV. The Treatment and Cure of a Case of Mental and Moral Deficiency. Lightner Witmer. Vol. 2, p. 153.
- V. The Restoration of Children of the Slums. Lightner Witmer. Vol. 3, p. 266.
- VI. The Irrepressible Ego. Lightner Witmer. Vol. 4, p. 193.
- VII. Children with Mental Defects Distinguished from Mentally Defective Children. Lightner Witmer. Vol. 7, p. 173.
- VIII. The Outlook for James. Sarah Warfield Parker. Vol. 10, p. 71.
- IX. Tom the Enigma. Sarah Warfield Parker. Vol. 10, p. 209.
- X. A Fettered Mind. Lightner Witmer. Vol. 10, p. 241.

eight. He was frail and undersized, with legs comparatively short, and long trunk, head, and arms. An unusually heavy mass of coarse, waving brown hair grew down partially to conceal a forehead so abnormally low as to seem no forehead at all. Even then, with his body all tense, rhythmic movement, I could see how ugly his face was, with its small broad nose and thick lips, partly opened. I could see, too, the somewhat underdeveloped ear set far back and, in the shuffling movement, caught a suggestion of the flat, square foot.

Suddenly, he saw me and came forward with a courtly bow and cordially proffered hand that would do credit to the most punctilious of the old time southern gentlemen. I felt his hand in mine—coarse, inert, stubby, with short, blunt fingers. For the moment, he looked almost attractive with his brown eyes sparkling and his cheeks flushed with the animation of the courteous host. "Have you ever been to Savannah?" he asked, bending toward me graciously.

But the welcome over, the light died out of his face, and I saw, sitting in the corner, alone, a different Gordon. I saw the pallid, yellow skin of a face that was old, weary beyond any weariness I had ever seen, a face marked with tired, quivering lines, and eyelids that flickered ceaselessly. Yet again, after supper, he was all animation. "Have you ever heard 'Cavalliera Rusticana' sung by Enrico Caruso?" he asked.

As the record was played, he stood directly in front of the graphophone, marking time with head, arms, in fact with rhythmic movement of his whole body. He came back to me, humming, his face a bit perplexed. "What is it I am singing?"

"The Toreador," I answered.

His face lighted with recognition. "I heard that when I saw the play called Carmen at the theater. Carmen was a lady. This is what she sang," and he hummed again, a few measures from one of Carmen's solos.

Gordon's abilities were foremost this first evening—his sense of rhythm, and his audito-motor memory for words and tunes. Only his physical characteristics led one to suspect the disabilities which these concealed.

In reality, Gordon, this finished young gentleman of ten with the society manner and the excellent memory, stood very near the zero point in the scale of social efficiency, and as sixteen months of subsequent observation have proved, he is incapable of being trained to even a passable level of such efficiency. Underneath his excessive excitability to a certain few stimuli which interest him, lies an

organism of low vitality and sluggish response to material environment. With the exception of a few charged areas energized for immediate and violent response, his mind is in a state of unperceiving, irresponsible detachment from surroundings.

Not inability to do a thing *per se*, but inability to do it efficiently, is his marked defect in practical performances. He learned to dress himself but emerges in such a rumpled state that someone must straighten everything he has on. He learned to fold a napkin, to lace a shoe, to tie a bow, but unless coerced, does them wretchedly. He is incapable of putting anything straight, for he lays it down dreamily, scarcely looking. He will always dream across a city street, oblivious of traffic, until he is under the horses' very feet. He will lose himself in the city, for he can wander on for an hour with no consciousness that he has lost his companion. He continually bumps into people, for he never looks where he is walking, and despite his courtesy, does not awake to the situation quickly enough to apologize. He loses everything he carries, even candy for which he has an inordinate passion. He drops everything, spills everything, tumbles everything he touches. If his hat blows off, he does not know enough to pick it up. He never pays enough attention to a game to remember his turn or to keep consistently in view the aim of the contest. One season, Gordon was actually energetic enough to coast in the snow, but at the foot of the hill he remained lying on his stomach flat on his sled. Some one told him to get up. "Why?" he asked vaguely.

Though his coordination has improved so that it is possible for him to fill in neatly the outlines from the Montessori insets, he does not develop sufficiently sustained attention to boundary and to precision of line to impel him to do the possible. Though he has learned to write in good form, and because of his verbal memory and facile flow of ideas, composes fluently, his penmanship is careless and smudgy unless he is constantly stimulated. Though by persistent illustration, the concepts which at first were totally lacking, of middle, upper, lower, right, left, under, on top of, turn over, flat, straight, etc., have been formed in Gordon's mind, his habitual inattention to position makes him unable to use these concepts without hesitation and indecision.

This inability to react effectively to the animate and inanimate objects about him cannot be corrected. Persistent drill can, in many instances, give him the means to such reaction but in him the will to react is lacking. Perseverant attention to the means as applied to the end cannot be developed in him. Gordon's responses are spontaneous only to those stimuli which, in his physical organiza-

tion, are immediately interesting to him. These immediate interests are reading, music, conversation, words, watches, wasps, twisting, and soldiers. He cares nothing for other children, in fact, always resents their interference, and is, indeed, already a leisurely old gentleman, enjoying only the society of adults. Obviously, if to this incapacity to look out for himself, you add Gordon's total deficiency in the concept of numbers, you have an individual who drops away down the line of imbecility—a total incompetent in the practical affairs of society. Yet superimposed on this low level of daily performance is an apparent gift of language that makes us pause to question: given a valet, a financial adviser, and a private secretary, can this boy develop intellectually into an individual who approximates the normal?

One morning at the breakfast table he asked pleasantly, "Did you know that George Bernard Shaw had written a new play—'Androcles and the Lion'?"

"Yes," he added, "I read it in *Everybody's* magazine."

By the time he has finished a brief and accurate outline of the plot—remembered, by the way, from the story of Androcles and the Lion read in his reader eight months ago—the casual observer may be tempted to believe that this precocious child can indeed realize his ambition to become "a college professor who teaches psychology and geology and writes plays."

For an understanding of the real insufficiencies of the child it is necessary to differentiate between a gift of words and a gift of language. We shall study Gordon, first, to determine whether or not he possesses those elements which constitute a gift of words—sensitivity to verbal impressions and retentivity of verbal images. If we find that he possesses such a faculty, we shall attempt further to discover whether he possesses the associated mental qualities which are required to translate such a gift of words into a gift of language, that is, into a usable tool of expression.

Is Gordon sensitive to audito-motor impressions? He learns nonsense jingles, college yells, and rhymes almost on a single hearing. After he had heard another child repeat twice the eight lines of Stevenson's "Bed in Summer" he knew them perfectly. After six or seven readings of the story of King Alfred and the Cakes in Baldwin's "Fifty Famous Stories," he reproduced it almost verbatim. The original story contained five hundred fifteen words: He reproduced it in two hundred fifty-seven words, two hundred thirty-four of which (45 per cent) were from the book. Similarly, after reading twice King Canute by the Seashore, four hundred nine words, he reproduced verbatim one hundred ninety-seven words (45 per cent);

and of *How the Bean Got Its Black Mark*, three hundred forty-seven words, he recalled two hundred eighty-seven words, (82 per cent). Instances of this immediate sensitivity to words could be multiplied *ad infinitum*. I shall add only a transcript of his account of a visit in the city to show how swift he is to catch the words and sounds in his environment.

"I'm glad I'm not at the hotel. I like the country. It's so hot in at the hotel, and babies wakes us up and shades rattle. Our room was on the fifth floor, number 502. Do you know who manages the hotel now? Charles Blank. They have a fine dining room. Monday we had supper,—not dinner. Then we stayed down and listened to the music. They played something I knew, Tannhäuser. We stayed down until eight o'clock. The next morning I read to mother from a 'Little Boy Blue' book. I am sending the book to a little boy named Morgan. I took a bath too, all myself, a nice hot one. We had lunch at a tea room with Auntie. We went to the moving pictures—the Edison you know. It is on Market Street. You know those 'any rags, any bones, any bottles' men? There was one of them and a boy, and the boy stole a necklace and the rag-picker man said, 'Did you steal that necklace?' Wednesday we went shopping in the morning. I went to the moving pictures with Auntie. We had dinner at the hotel and I stayed down and listened to the music until half past seven. I went to bed, and after I was asleep, mother came back and I had been asleep all by myself while they had ginger ale and things. I could not stay asleep in the morning because a baby woke us up crying."

In addition to sensitivity to verbal impressions has Gordon adequate retentivity of the images formed? The poetry he has learned he remembers over an interval of twelve months, recalling the lines with very little prompting. After a lapse of three months he reproduced the story of *King Alfred*, already mentioned, in two hundred eight words, one hundred seventy-four (33 per cent) of which were a direct overhang from the original. Nine months after the first reading he retold it in one hundred eleven words, sixty-seven of which (13 per cent) are to be found in the printed story. Gordon added as he finished, "I saw it in the book, 'Fifty Famous Stories' by James Baldwin." After two months he recalled 25 per cent of *King Canute*, and 61 per cent of *How the Bean Got Its Black Mark*,—approximately a drop of 20 per cent of recall in two months. A month after Howard Pyle's "*The Companions of King Arthur*" had been read to him, Gordon showed a distinct and accurate recall of names.

"King Arthur was a king, and he ruled in the southern part of

Britain. He had knights. Their names were Sir Galahad, Sir Geraint, Sir Pelleas, Sir Percival, Sir Tristram, and Sir Lancelot of the Lake, and Sir Gawain. He wore a crown of gold, jewels, emeralds, and opal stones, and he had a fair lady named Queen Guinevere. Her father was King Leodogrance of Cameliard. He had a court, ladies, damsels, and lords. He had a wonderful sword, Excalibur. It had jewels, rubies, and opal stones, and emeralds, and when King Arthur went out to fight it would go through any one. He went with another knight through the woods and at last he came to a wonderful and beautiful place—a magic enchantment place, and he saw a hand coming out of the water and he rode in an enchanted boat that went very fast, and after he got the sword Excalibur the hand went under the water. King Arthur had a Round Table. It was like a ring, but there was one chair that no one could sit in—Siege Perilous. There was fifty chairs for fifty knights. He had one for King Pellinore and Sir Pelleas and Sir Launcelot and Sir Gawain and Sir Bann of Benwick and Sir Percival and Sir Galahad and Sir Geraint. Merlin was an enchanter. He was a nice enchanter and he made a ring for King Arthur, that Round Table, for his marriage. There was another queen, Queen Morgan le Fay, sister of King Arthur. A wicked enchantress, Vivian, bewitched Merlin. Sir Launcelot loved Queen Guinevere. Oh, yes, and

“Elaine the fair, Elaine the lovable,
Elaine the lily maid of Astolat,
High in her chamber up a tower to the East
Guarded the sacred shield of Launcelot.”

The basis of this retention is not only the acute sensitivity to the impression, but the mental repetitions of the verbal image. Gordon loves the sounds and says them over and over to himself for sheer pleasure in words. When he is listening to prose or poetry, he often stops the reader, “Please read that over again. Do you mind? It is such a nice sound.”

There is certainly every indication that Gordon receives and retains verbal impressions. Of course, it would be impossible to keep a record of even a hundredth part of the verbal images conspicuous in a single day's observations. It is significant, however, that in a great mass of material collected in sixteen months' study of Gordon, including diaries, letters, records of conversations, recollections, oral and written reproductions of stories, etc., I have, exclusive of twenty-six stories reproduced verbatim almost *in toto*, a record of one thousand forty-four distinct verbal images and fifty-four repeated

fragments of conversation. This enumeration of verbal images does not include the primary images which are a part of the mechanism initiating speech, the possession of which Gordon's fluent conversation justifies us in assuming. They are such phrases as Gordon treasures for pure pleasure in sound, as "King Leodogrance of Cameliard," "Geraldine Farrar," "the eminent psychologist," etc. They are the verbal high lights which signal the conspicuous development of the language center. It can, therefore, be strongly substantiated on inference from behavior, that Gordon's mechanism for the reception and retention of verbal impressions is particularly active, in fact, that he has a definite gift of words. Until we look at the mental qualities which translate this verbal faculty into the faculty of expression, we may be tempted to believe that Gordon's gift of language not merely approximates but exceeds the normal.

To own a kiln full of bricks does not make one a mason. Gordon has a speech center stored with thousands of verbal images, a store that increases daily. What are the qualities requisite for the use of these words in expression as the units of language? There seem to be three most important qualities; (1) a so-called memory span adequate to link a series of images in sequence; (2) a flexibility of association which will bring them into significant inter-relation; (3) a consciousness of meaning that converts these verbal images into symbols of ideas and concrete images.

Our first concern is with the adequacy of Gordon's memory span,—the number of images that he can link together in sequence. His span for numbers is barely five; for disconnected monosyllables, four; for colors named, three; for colors seen, scarcely three; for pictures of familiar objects exposed sixty seconds with no inhibition of voco-motor aid in memorizing, five; for syllables in a sentence, ten—not a good memory span for a child of ten years. This limited span showed itself in Gordon's reproduction of stories. After two readings of a two page story, King Canute for instance, he could recall the substance of the story in full. After four readings of King John and the Abbott, a story of double the length, he repeated it glibly up to a certain point, a little more than half way through, then remembered not another syllable or another idea. Gordon's reproductive memory is excessively active up to a certain point, then the strain snaps the thread. He receives only a limited number of impressions in sequence.

A still greater limitation comes to light when we pass over the one, two, three sequence to a radial inter-relation of ideas. The first signal of the inflexibility of Gordon's associations is seen in the extreme difficulty he has in reversing an association. An attempt

to teach him geography met in many ways with considerable success, but his knowledge is limited to a rigid sequence. He can learn—"Mexico is a republic—the United States is a republic." If you ask him then, "What republics do you know?" he either cannot answer or brings out the reply with visible signals of extreme mental disturbance. To the question, "What rivers do you know that flow into the Mississippi?" his answer is prompt. At the next question, "Into what does the Ohio River flow?" he shakes his head with an expression of abject misery. Moreover, he cannot bring together two sequences which have a single term in common.

Q. Into what does the Mississippi River flow?

A. Gulf of Mexico.

Q. Into what does the Rio Grande River flow?

A. Gulf of Mexico.

Q. What two rivers do you know that flow into the Gulf of Mexico?

The reply is only a flushing face, twisting hands, and a miserable shake of the head. He cannot hold a group of ideas in his mind under a single category. He knows, for instance, that Georgia is in the United States, New York is in the United States, Pennsylvania is in the United States, etc., but he seems wholly lacking in the conception of them all as having a common quality of statehood, all parts of one country. Gordon is always interested in the first four or five chapters of a book, and can tell the main points intelligently, but as the threads of the story are woven into some complexity of plot his interest flags, and one finds that he no longer shows any comprehension of the progress of the story. It seems, therefore, that Gordon has a further handicap in defective associability of words and ideas.

Consciousness of meaning brings us into a more vague psychic field where whatever data we have can only be suggestive. It is to be expected that such a surplus of verbal images retained as themselves a pleasurable element in mental content apart from any use in expression, would usurp in some measure the place of ideas and concrete images. There is evidence that this is the case. Gordon's letters and diaries are often composed of an extended catalogue of flowers or animals, of a large number of which I am reasonably sure he has no visual image. One day he was talking about a baby. He began with a definite auditory image of his actual experience, but gradually drifted into familiar fairy tale phrases.

"It cried all the time—'e-aa-h.' It was the cunningest of all the children, and the baby grew more and more beautiful than ever,—more and more beautiful every day."

Gordon can tell time quickly and accurately, but it is a purely mechanical acquirement. A given position of the hands on the face pulls a string which jerks out, "Ten after five." When someone says, "Ten minutes after five" Gordon is mazed. "What does ten minutes after five mean?" he asks.

He has no association with the intermediate marks other than five, ten, fifteen, etc. Nine minutes after is no more closely connected with ten minutes than with fifty minutes after.

The compelling interest of verbal stimuli does, indeed, withdraw Gordon's attention from concrete stimuli. If he is shown a picture, his attention flies instantly to the words of the title and the picture makes practically no impression. I showed Gordon a series of twelve simple colored illustrations in Madge A. Bingham's "Mother Goose Village." I concealed the title, allowed him to study the picture silently for one minute, removed the picture and asked him to tell what he had seen. The sum of his recollections was about 50 per cent below the reactions of a low grade imbecile whom I had tested some few months before, a child of considerably less apparent intelligence but with a greater interest in visual impressions. Gordon remembered persons and positions fairly well, but noticed few details, and in his effort to remember color usually named the wrong color. In the mass of material in which the one thousand forty-four verbal images were found, only forty-six concrete visual images appeared, fourteen of which are probably verbal and only fifteen of which are distinctly vivid visual memories. Ten of these fifteen are visual images of movement—an interesting point in connection with the indications from the study of the girl mentioned above, that in her case also movement is the most coercive stimulus to visual perception. On the other hand, fifty vivid concrete auditory images are to be found in the material collected and the majority of the fifty-four repetitions of conversations were accompanied by imitation of voice. Music, explosions, cries, bells, and voices were the predominant stimuli recalled. He described as "Zzzzzzzzzzz" the sound made by an electric vibrator, an aeroplane, and a machine which he had heard. He spoke of wind as making a "sound like singing." He talked one day about a typewriter,— "There were keys, and you pressed them, and they went tick—tick, and then ding-ding."

It would seem that Gordon's sensitivity to verbal stimuli distracts his attention from all concrete stimuli except such as are strong enough to compel attention—visual stimuli of movement, and sounds which are immediately exciting to the over-charged auditory area.

There is further ground to believe that the paucity of visual imagery is conditioned by this withdrawal of attention from visual stimuli rather than to defect in the visual receptive area. Provided his attention is properly directed, Gordon readily forms visual images. He is interested in faces, and recognizes and names instantly even after a lapse, perhaps of years, a person he has seen only once or twice. Color design blocks and color cubes were introduced into the school exercises and as of use in developing his defective sense of vision and as material on which he might exercise whatever capacity for visual imagery he possessed. In June, 1914, Gordon watched me take two dominoes and lay them at right angles. With the two dominoes lying directly before him to copy, he could not place two others like them. At the end of August, 1914, when I first gave Gordon the design blocks, I made a square of four red blocks and gave him four others to work with. He looked at the square, piled four red blocks one on the other in a tower, shook his head, knocked them down and strung them out in a row, and finally ended in tears. In March, 1915, Gordon was able to copy rather difficult designs requiring thirty-six blocks. Even more apropos to our inquiry was his acquired ability at that time to reproduce from his own image, after a sixty second exposure of the stimulus, any arrangement within a square of four color blocks. He was able to reproduce from a visual image such relatively complicated designs involving the two-color faces of the blocks as the pinwheel and the chevron.

An interesting point bearing on the question of memory or image span is the observation that he was never once able to reproduce a group of six color blocks. With his attention directed definitely to concrete visual impressions Gordon was able to form simple visual images. This training did not seem, however, to develop in him any more spontaneous response to concrete visual impressions. The almost exclusive fixing of his attention on words and sounds seems to obscure other impressions, and therefore exclude largely images of other stimuli.

In many instances words "do not know their place" in Gordon's mind. They establish a tyranny where there should be a service of ideas. There are other instances of behavior where there is some little evidence of consciousness of meaning. The unerring instinct with which Gordon uses a word in its proper context would lead us to suspect, though it does not prove, some dim comprehension of its meaning. There are daily bits of conversation which startle one with the apparent intelligence with which the child uses words picked up here and there.

"I am working industriously, am I not? This is very hard, but I will demonstrate to you that I can do it."

"I did not like to stay in bed. It was so tedious."

"Heroes are mighty and strong."

"When I was holding the pencil it broke easily because it is brittle."

Then again, he misses his shot,—*"We saw a whole cattle of cows."*

His facility in finding synonyms also stands on this borderline of evidence. In reading I stop him frequently to ask the meaning of a word. His answer is always quick and usually accurate.

Dwelt—"lived"

sable—"black"

crimson—"red"

scarlet—"very bright red"

gaze—"look"

curly shepherd lad—"a boy with curly hair, isn't it?"

damsel—"a young girl"

barge—"a boat"

bade—"told him to do it"

Beyond these there are further evidences, I believe, of positive consciousness of meaning. In the Binet Tests, according to which, by the way, Gordon's mental age would be reckoned as eight years on an uneven distribution of credits (five years plus four six-year tests, plus four seven-year tests, plus four eight-year tests, plus four nine-year tests, plus one fifteen-year test), Gordon defined a fork as "something you get things with and put them in your mouth"; a table is "made of wood and it has five feet, and when you sit at the table to do puzzles you have to rest your hand on it." He compared the butterfly with the fly,—*"A butterfly has wings. And does a fly have wings? Yes. It hasn't a head like a fly. The butterfly isn't so large as a fly—I mean it is larger. His wings are yellow—the butterfly's are—but the fly's wings isn't."*

One day he was asked to write a composition of what he knew about the earth. *"The Earth is round like a ball. We live on the Earth. We can see the sun shineing up in the sky. We can see the moon at night. We can say our prars to God at Night. We get up in the morning and dress ourselves. We see the people all around us. We see the flowers growing on the bushes. We can see the trees blowing from the wind. We can feel the wind blowing hard. It makes us cold. We can see the horses stamping their feet on the ground."*

In this I think clearly Gordon is expressing ideas and not merely

using words. The way in which he handles a composition on the Lady of Shalott shows too how he can in a measure throw off the tyranny of words even when the ideas have been suggested by verbal stimulus.

THE LADY OF SHALOTT.

"She was a young lady that lived in a castle. She had a spinning wheel and she had a magic web with colors gay—bright red and bright pink, and bright green, and bright purple. She has heard a vose say a curse is upon her, if she stay to look down to meny-towered Camelot. She has a mirrier before her all the day in the mirrier she sees the road going down to meny-towered Camelot. She sees the knights on horseback and they come two by two. The nicest knight in all the land is Sir Launcelot, and the lady of Shalott looked at him on the road that leads to meny-towered Camelot. She got in a boat and sailed away in the river and while she was floating she sang, and she sailed and sailed, and she died, and all the knights of King Arthur's court crowded around the Lady of Shalott, and one of the knights was Sir Launcelot, and he said she has a beautiful face."

One can scarcely deny that in Gordon's mind concrete impressions and consciousness of meaning are often obscured by the over balance of verbal images. Neither can one deny that Gordon has some mental content other than verbal images, and has also some ability to put words in their proper position as symbols for expression of that content.

We are now in a position to summarize Gordon's status in relation to the faculty of language. He has to his credit a conspicuous gift of words, a certain comprehension of their meaning as symbols of ideas or images, and a certain ability to use them as such symbols, but the scope of these abilities is rigidly limited by his defects. A short receptive span of impressions reduces to the briefest series the number of ideas, images, or words, which in his mind are registered in sequence. The rigid inflexibility of association tracts also seriously limits his ability to manipulate single ideas or simple sequences which are registered. An over-attention to words and sounds further subtracts from his store of concrete impressions and his attention to the significance of the symbols he uses.

Gordon's language faculty, which seems so highly developed, is on the contrary seriously defective. With all its limitation it is, however, a positive quality—his one gift. On it must be based his intellectual development. Such development, which on a straight line may progress far, will be extremely simple and will be marked

by long stretches where glib verbal repetition masquerades as knowledge. There are two types of behavior in Gordon which distinctly influence his progress on this straight line toward culture. In the first place we have to consider a series of emotions and reactions which are commonly called hysterical. His sensitive organization is in a continual state of vibration. Such a high strung physical organism vibrates to every stimulus, and his mental state is quite as susceptible to the impetus of suggestion.

Gordon trembles and cowers under the acute pain of the sensation a loud noise stimulates in his over-sensitive auditory processes. He suffers "when shades rattle and babies cries to wake us up." He thrills to the sound of music or melodious words. He quivers with fear when another child raises his hand, even in pretense of striking him.

An idea has quite as much power to upset his mental and physical equilibrium. He eats wretchedly at table, stuffing his mouth in apparent inability to swallow. A reprimand only increases the difficulty. Gordon then comes to table with a tense, nervous resolve, "I mustn't fuss with my food." The idea is so in the forefront of his consciousness that he does fuss and the idea of the consequences of fussing so fill him with fear that he is reduced to a state of gulping, quivering tearfulness. I watched him writing one day. He had been in the habit of making a superfluous loop on the last back stroke of the *s*. He was muttering to himself determinedly, "I mustn't make a loop," but every *s* emerged with the forbidden loop. The next day I said quietly, "Remember to come back on the same line in your *s*," and lo, the trouble was over.

Suggestibility is the keynote to Gordon reactions. If he hears a very amusing story read in a somewhat mournful tone of voice, he will sit in a luxury of grief, the tears rolling down his flushed, quivering face. A simple "Yes" to his question, "Is it sad?" is sufficient to make any piece of music bring him to the same emotional state. Another child is always sure of company in his tears, for Gordon weeps in sympathy with everyone.

Except for his purely physical apprehension of sound and his fear of losing his balance, which has a physical basis in his ill-balanced body, I think Gordon's fears are all subject to suggestion. He was at first afraid of snakes, frogs, and toads. When he saw other children liking them, and handling them, his reaction changed. He wanted to touch them; to bring them home. One day in the spring he found a wasp struggling in a can of water. He rescued the wasp, spread it on the hedge in the sunshine, and hung over it for a full half hour until, to his joy, it took wing. This was his first experience

with wasps. Thereafter, all bees, wasps, and hornets were his special delight. He had no thought of their sting, and handled them freely. "My friend the wasp," he called each one gaily, and strangely enough, though he allowed them to crawl over his hands, and one afternoon lent the shelter of his trouser leg to a wasp pursued by a less sympathetic youngster—his friend the wasp never harmed him. A year later, a hornet stung Gordon. Disillusioned, the child shrank from his beloved insects, and the friendship is at least temporarily severed.

A thunder storm usually frightens Gordon, though his fear is sometimes modified by a certain esthetic pleasure in watching the fall of the rain and the play of the light in the sky. One day, during a storm I went into his room to see if he was frightened. I found him lying in bed, his eyes bright, his face eager, his body tense.

"Look," he cried, holding up his arm with the fist tightly clenched, "I am playing the lightning goes into my arm and makes me strong, and see it *does* make me strong," making me feel of the rigid muscles. That self-suggestion has counteracted the fear of storms except at times when the crash of thunder is so loud as to set him vibrating with the physical sensation.

There is much of the hero in Gordon, for he fights his fears with all the might of his little being. At first he only reached out wistfully for reiterated assurance from others that he has nothing to fear. Early in our experience with Gordon he was taken one day to the city for a doctor's examination. A dozen times on the train he asked fearfully, "Is she going to hurt me?" On the way into the office he accosted the janitor, "Does the doctor hurt little boys?", and again of the stenographer he asked, "Does the doctor hurt little boys?" Despite all assurance the fear was too much for him, and in face of the doctor, Gordon burst out, "Are you going to hurt me?"

Later he began to reassure himself. He sat through the circus, tense, quivering, and exclaiming, "I'm not afraid, am I?" Sometimes when the fear rose within him that he might not do his school work well he would begin, "This isn't hard, is it? Why, there is nothing to be afraid of. I wouldn't be afraid of a teacher. There is nothing to cry about, of course not." Gordon began to make explosive resistance to the teasing suggestions of the other children. "I won't, I won't, I won't," he would shout, but the moment he stopped the vehement self-assertion, their strength became too much for him.

This battle against suggestion foredoomed to failure explains more than one phase of his conduct. Gordon is afraid of people—all people, even those who are most kind to him. The cross play of

their personalities upon his suggestible nature, and the conflict of their suggestions with each other and with the power of suggestion in his environment and instincts upset the equilibrium of his mind. The painful chaos thus created causes a behavior similar to fear reaction, a quivering tensity, a tip of the body away from the person, and an apprehensive query, "Are you going to do me anything?"

Gordon is too afraid of people to wish to be other than obedient, but in the absence of the suggesting personality, impulse is often too strong for him. He seems to have little power of inhibition. A piece of chocolate candy seen is a piece of chocolate candy eaten. Even if the suggestion is a bottle of a dozen chocolate malted milk tablets, the whole dozen are swallowed rapidly. An impulse to twist and tear cannot be inhibited. At least half a dozen pairs of glasses have been twisted into bits in a year. Five inexpensive watches have been similarly destroyed, though a watch is Gordon's proudest possession. Money has an irresistible attraction—not money to spend, but money to handle, to pat in a purse, and to put in one's mouth, to gloat over.

Probably his lies can be traced to this same evil genius—suggestibility. Not a day goes by that Gordon is not detected in two or more lies. One type of lie, the denial of a misdeed committed, can be traced to the over-powering force of fear of punishment; another type, the confession under pressure of a misdeed not committed, to the suggestive force of another personality which fully convinces Gordon of his guilt; a third type, a spontaneous confession of an imaginary misdeed, to an eagerness to find expression for a newly formed ideal of truth which he at first confused with mere owning up. Finally his claims to accomplishing something which is quite beyond his capacity as, for instance, his claim (one morning) that he had tied the bow on his shoe several weeks before he had actually learned to do it, may be traced to the confusion of the mental image of his aim with the mental image of the actual occurrence. Indeed, for Gordon, ideas have quite as much force as reality, and at a time of conflict and nervous confusion he is unable to distinguish between the two. In the main he has a vehement desire to tell the truth even though he doesn't know what is truth.

Such a state of fear, vacillation, and nervous tension, all traceable to high suggestibility, must necessarily stand in the way of his mental development. It makes every effort to think, a moment of high nerve tension, so that all mental work is attended by immediate and excessive fatigue. These are the marks, the marks of weariness, of nervous conflict which he bears on his face. This confusion also makes an independent reaction to a problem almost impossible since his aim is only to give the response that is wanted of him.

One has only to see his almost uncontrollable impulse to look at the person directing him rather than at the task itself, to see that this is his attitude toward work. Suggestibility, with its resulting nervous tensity and loss of equilibrium is a very great influence operating against Gordon's mental development along the lines of such abilities as he possesses.

A second influence, on the contrary, is one which we may count as a positive ally. Gordon is a thinker. He may be inactive in relation to material surroundings, but he is not mentally lazy. When Gordon compared the butterfly and the fly, there was every evidence that he was carefully thinking out the differences. In the record of his responses to the Binet Tests there are other evidences of thought. He took the questions in the ten-year old group very seriously though he failed on every one. He made a definite effort to puzzle out the answers to each question. His responses came always after a long pause.

Q. What would you do if you were delayed in going to school?

A. Really, I don't know.

Q. What would you do if you were to take part in an important affair? A. I don't know.

Q. Why is a bad action done when one is angry more excusable than the same action done when one is not angry?

A. I am thinking and thinking, but I can't make that out.

Q. What would you do if you were asked your opinion of someone whom you did not know very well?

A. I don't know what I would say. Do you mean a stranger?

Q. Why should one judge a person by his acts rather than by his words?

A. I am thinking, but I can't get it. People can do errands for you, that is one thing.

In the fifteen-year old test Gordon's analysis of the situation, "My neighbor has just received some significant visits. One after another, a doctor, a lawyer and a priest called. What is happening at my neighbor's?" seems really remarkable, in the light of his age, and of his limitations of experience and of mind. He answered, "Someone must be sick, and the priest might be there to christen someone, and the lawyer might be there to find out if someone had done wrong." When left to itself Gordon's mind is independently active. He rarely lets pass a question which he fails to answer. An hour or so later he will rush up to his teacher exclaiming, "I know it now!" Sometimes a space of twenty-four hours will intervene between the question and the answer.

The child's thought, too, pushes out beyond the present complex of sensory stimuli about him. He lives often in an imaginary world.

He plays sometimes that he is a knight, Sir Gordon, and calls gaily, "Come my fair Elaine. You may comb my black hair." He thinks of the future, of himself as a man, how he may get back to his own home in the South, of marriage, and of a profession. His thought is tinged at times with a wistful intuition of his incapacity.

"I don't think anyone will ever want to marry me, do you? I should like to have a wife, because I want someone to love me, and eat dinner with me, and to go to town with me. How can I ever be a lawyer? I don't know how to do lawyer's things. Could you teach me how?"

His mind reaches out toward a concrete spiritual reality. He says that he is "more braver" when he thinks God is someone very kind and very near, and with him all the time. He looks at the stars at night and asks, "Which star is God on?"

Of course, a part of this is mere words, and where the consciousness of meaning enters in, the comprehension is of the vaguest and most elementary, but that the mind of a low grade imbecile should be so independently active, and should concern itself with such abstract problems is to me a curious phenomenon. Perhaps it is the mind of his race persisting in an unequal, degenerate organism. Often the defects which bring an individual so far down in the scale of imbecility are such as to remind us emphatically of our kinship to the animal. Gordon's external physical defects do remind us of this kinship, but an acquaintance with Gordon's mental processes seems rather to reveal the persistence of the distinctly human qualities of mind in a degenerate body in which the neural and cerebral development are inadequate mechanisms for its operation. Is this mental activity correlated with the high development of the language center—one of the specific faculties differentiating man from animal?

The treatment of such a case is, of course, the practical question. Gordon belongs to the mongoloid type in which we often find a peculiar union of conspicuous and permanent deficiencies with equally conspicuous gifts. Such a case, though tantalizing in its specious doubtfulness, is not hard to deal with when its limitations are once understood and accepted. The obstinate deficiencies cannot be remedied. The few capacities are energetic enough, if wisely directed, to develop themselves. For Gordon the program is simple; first, the physical building up of his weak and degenerate organism; secondly, tactful management to eliminate in so far as possible, the nervous elements of fear and self-consciousness; thirdly, a careful use of his suggestibility to fix, if possible, the suggestion of certain useful types of behavior; fourthly, the development of his appreciation of literature and his gift of expression as a resource for his necessarily lonely, protected, and inactive life.

THE SUPERFICIAL IDIOT—A TYPE.

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In a psychological examination a diagnosis may be arrived at in several different ways. Sometimes a tedious array of tests and several examinations, together with data culled from the home and the school, are necessary to determine the mental status of a child. At other times a single characteristic may serve as a key to the entire mental situation. The two cases cited here illustrate the recognition of a definite type through the presentation of a single symptom.

Alexander was just three years old when he was brought to the Psychological Clinic of the University of Pennsylvania because of his peculiar behavior and inability to speak. While the mother was giving the usual data in regard to his birth, babyhood, etc., Alexander passed through an adjoining room. The examiner had not seen him but heard him utter a peculiar cry which at once recalled to her memory Lucius, another three year old who had been examined a year and a half before. She jotted down Lucius's name with the words "superficial idiot" and continued the interview. Later on a comparison of the two cases brought out the following facts in regard to Alexander and Lucius:

ALEXANDER

Was unable to talk; did not understand commands.

Hearing appeared to be defective.

Gait unsteady and staggering; refused to walk if he could be carried.

Whimpered constantly, excepting when being carried.

Would sometimes wake up crying in the night.

LUCIUS

Tried to say a few words and understood simple commands.

Hearing appeared to be normal in the right ear but defective in the left.

Gait unsteady and staggering; liked to be carried.

Whined and moaned a great deal, crying lustily at times and fretting if forced to be quiet. Loved to rock, and to have his mother sing to him; was soothed by singing, and at times attempted to join in by humming a few notes.

Cried a good deal at night. When put to bed in his crib he would change during the night from his crib to a bed, or he would place the pillows from the bed on the floor, and sleep on them there.

ALEXANDER

Frequently put his hand to his right ear or to the back of his head and cried as though in pain; banged his head against the wall or floor. If laid on his back he immediately rolled over toward the left side.

Internal strabismus of right eye.

Enuresis night and day; unable to make his wants known or care for himself at the toilet; could not dress himself.

Explored objects with his lips in simian fashion and put everything into his mouth, no matter how filthy it might be; seemed to be unable to retain objects in his mouth and let them drop out; did not drool to any great extent; chewed the corner of his coat.

Was pale and badly nourished; his head hung to one side as though it were very heavy.

Could not feed himself, ate only bread and milk or bread and tea; would drink a small cupful of sugared milk.

Bowels were irregular.

Did not play; could not grasp toys.

Birth and babyhood were normal. As a baby he was always troublesome, was slow in holding up his head; cut his first tooth at eight months and walked at nineteen months, though unsteadily. He had no convulsions, accidents or falls; had whooping cough and measles. The family history was reported as negative, excepting that the mother's cousin was said to be a deaf mute and a cousin of the father did not talk until his sixth year.

LUCIUS

Frequently bit the back of his hand, as though in pain, hit his ear or banged his head with sufficient force to produce a bruise and consequent hemorrhage.

Eyes co-ordinated well; followed a lighted match readily.

Enuresis night and day; unable to make his wants known or care for himself at toilet; could not dress himself.

Put almost all objects in his mouth; usually had a bit of twig or a broken match stick in his mouth and never swallowed it; did not drool.

A husky looking little fellow, holding his head well up and sitting erect.

Could feed himself but could not use a knife, fork or spoon. Was notional about his food, smelling it before tasting; had no regular meals; ate bread if sugared, or graham or vanilla wafers; would drink sugared milk, but only from a white enamelled cup.

Bowels were irregular.

Did not play but knew enough to ring the door bell when he wished to enter the house. Delighted in banging doors; liked to pull the dishes off the dinner table, and to smash glass.

Birth and babyhood were normal. His mother fell on the porch at the seventh month of pregnancy, but no bad results were noticed. He walked at thirteen months; tried to say "mom" and "pop." He had convulsions from the eighth month to second year; had whooping cough at nine months. The family history was negative.

The diagnosis of superficial idiocy in the case of each of these boys was reached through their utter failure to respond to tests which are eagerly attacked by normal children. The simplest tests were too difficult. The Witmer formboard, which can be done easily by a normal child of four, aroused no interest in either of these children. Alexander seized the blocks and put them in his mouth. When confronted with the Seguin circles, consisting of three discs of equal size to be placed in similar recesses in a board, Alexander made some effort to place them in their recesses. Lucius's attention was very fleeting. He heeded no commands excepting to pick up a bean bag and place it on a chair. This he did twice but was persistent in his refusal to do it a third time. He would not even imitate the examiner's action in placing blocks in a pile and knocking them down.

Both children were difficult to handle and almost impossible in an ordinary home. In both cases the mothers were worn out with care so the children were placed in a temporary home to relieve the situation. Lucius improved to some extent in his habits of eating, although a more stubborn child could not well be imagined. He could not safely be left alone unless securely tied in his bed or chair. After six months Lucius returned to his home where he is the most difficult member of a family group of six children all under eleven years and one of them a cripple.

The mother is anxious to place him in an institution as soon as possible but he is still under age and so obstreperous that it will be difficult to place him in any state institution.

Alexander was cared for for four months in the temporary home under the same conditions in which Lucius improved, but no progress could be made toward his improvement. He gradually lost weight and became less active until death resulted from marasmus and meningitis.

Lucius is still under the observation of the Clinic but no change in his general condition is anticipated, excepting that he will become more difficult to control and more anti-social.

MOTHER'S SON.

BY A. TRAVIS,

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Harry in a white linen suit, walking to church with his mother, is handsome enough to stir some elderly church-goer to optimistic reflections upon the glorious future of the younger generation. Chasing the hens, or stoning a dog, he is still handsome, and the charitably-minded old gentleman might murmur, "Boys will be boys," until he saw the extravagant delight Harry takes in causing distress. If a traveller from abroad were to spend a day in the same hotel with the boy, he would certainly form his opinion as to the objectionable American child he had heard about. Neighbors who saw him not once, or for a day, but every day at close range, found his behavior intolerable.

It was the perplexing privilege of the Psychological Clinic to be called upon to distentangle the web of hearsay that had gathered about Harry. Was he mentally deficient, or only socially malconformed? Was he being goaded to unlawful acts by the persecutions of envious schoolmates? Was he the product of his mother's neglect, or were he and his mother both victims of spiteful gossip? What was likely to be the effect of an attempt at this eleventh hour to provide him with judicious educational and disciplinary treatment?

In the summer of 1915 Harry, then eleven years old, was referred to the Psychological Clinic by a social worker who had not seen the boy but had heard conflicting testimony about him. His mother said he was a very nervous child. A year before he had been hazed at school by older boys, one of whom tore out a lock of Harry's hair. The parents reported the affair to the police, and ever since then the boys had had it in for Harry. Finally an Italian boy in the neighborhood attacked Harry with a knife, was arrested, and put on probation. The cutting made Harry so nervous that he had not been sent back to school.

The family came to the notice of the Court through the case of a Polish woman, who with her baby had been given shelter by Harry's mother. There were many reasons to believe that the woman was feeble-minded, and her deportation was being considered. This woman had turned upon her benefactors, left their home and gone to live with another family in the neighborhood, from whose house she was uttering complaints of ill treatment by Harry and defiance of the agency that had her under observation.

The community was made up of widely diverse elements. Perhaps the majority of the families were young couples with business interests in the city, rising rapidly in the economic scale, and bent upon the pursuit of pleasure as exemplified in a fashionably furnished house, a motor car, and membership in the local country club. In the diminishing minority were the older village families, who still regarded themselves as the more stable part of the population. Small farmers they were, most of them, with the necessary proportion of artisans, shop-keepers, and members of the learned professions. The farmers ranged all the way from the immigrant who had come in five years ago with a few hundred dollars and invested it to the last penny in a poultry farm, where he and his family were living meagrely while buying more stock and equipment; up to the Quaker families who lived plainly and comfortably upon the lands of their ancestors. Around and about them were many poor Americans who worked in the nearby mills as their fathers had done before them, and a larger number of foreign mill-workers, Americans and foreigners alike raising a few vegetables and sometimes a pig, on a rented acre or half-acre. Various as the members of the minority were in their social affiliations and manner of living, they were held together by a common distrust of the newer standards set up by the commuters.

When Harry moved into the town, he quickly became a cementing force that brought the old and the new to join hands to keep him in order. A social worker sent to investigate the situation found it very complicated indeed. She interviewed a housewife who said that Harry was the terror of the neighborhood. Hearing screams one day, her husband had gone over to Harry's house and found him throwing stones at the Polish girl and beating her baby with a stick. Harry and his mother, she said, had been arrested several times for maltreating the girl and otherwise disturbing the peace. Another neighbor reiterated the statement that Harry was a terror and made it impossible for his mother to keep a servant any length of time. A third reported that she had seen Harry whack the Polish girl with a stick and had had his mother arrested for permitting it.

Lastly the social worker visited Harry's mother, whose view of the matter was that the neighbors were jealous of her because she had the finest house and largest grounds in the village, and did not call upon the townspeople. They also owed her a grudge, she believed, because Harry had been the means of getting their children into difficulties. They called him opprobrious names,—“Loony” and “Crazy-kid.” She told the social worker she would

like to have her son examined, so that she could sue them for slander if they continued to say he is mentally unbalanced.

Harry was examined at the Psychological Clinic in July by Dr. Francis N. Maxfield, who deferred his diagnosis with the comment that probably the boy would prove feeble-minded. At the Clinic the mother explained that she was very nervous and had moved to the suburb because her physician had recommended country life. She did not like her neighbors. They were mostly, she said, immigrant families, uncouth in their way of living and antagonistic to anyone more fortunate than themselves. She considered that Harry was nervous like herself, and had been spoiled because she was too delicate to look after him closely. He had a frank open nature, with strong likes and dislikes. His mechanical ability was great, and he was bright enough, in her opinion, to get on in school if the children had not frightened and worried him. He could dress himself, she said, and could make change. She admitted reluctantly that Harry could not tell time, even though she had given him a new watch that he was wearing.

The mother reported that Harry had been examined by two physicians who pronounced him in perfect health. One of them said his troubles were due to surplus energy. He had had a healthy and uneventful babyhood, and had escaped the usual contagious diseases. At birth he weighed ten pounds and was a satisfactory infant in every particular, much to his mother's amazement, for she had what her physician called walking typhoid during the first four months of her pregnancy, and had been very restless and melancholy.

Harry was the fourth in a family of five sons, the oldest of whom was twenty-six. The youngest had died when a baby. The three older boys had gone as far as the second year of high school, were in business, and had never caused anxiety.

The mental examination bore out in some degree what Harry's mother had said of him. He did fairly well in all tests using concrete material. He replaced the Witmer cylinders very well indeed, and copied patterns readily with the design blocks. When the examiner emptied a box of thirty-six colored cubes upon the table, and said "Give me three red ones, Harry, now four yellow, and three blue," the boy gave the right number of each color. When the examiner added, "Now how many have I all together?" Harry could not tell, though he recalled how many of each color had been given, and counted desperately on his fingers for two minutes. Four green, two blue, and three red, he said equalled ten all together. When the problem was given abstractly, he said "Two plus four plus three

equals six." After handing over three green, one yellow, and four red blocks, he remarked, "I couldn't figure that out."

Harry was nonplussed when shown a second reader that offers no difficulties to an ordinary child of eight. "I can't read," he protested. A simpler book was handed to him, and he was urged to pick out some words that he knew. He found the word *the* four times on one page, repeated "I can't" and burst into tears. When he had recovered his composure, his auditory memory span for digits was tested and found to be limited to four.

In the Binet tests, 1911 revision, his mental age came out as eight years. He knew his birthday came in August, but he didn't know that August was next month. He didn't know what month Christmas came in, or even in what month the Fourth of July came, though he had just celebrated it. He failed to find the absurdities in the three statements, and would not give any words in the three minute test, in spite of many suggestions from the examiner.

With pencil and paper his adding of a column of three digits was a laborious process. At the blackboard he added $5+3+3$, and $6+4+5$, getting the correct results in both cases by counting on his fingers. He added 32 and 45 and read the result correctly as 77, but he added 48 and 33 to make 711, and could not read this result.

He worked over the smaller Healy Construction Puzzle for about two minutes and a half, then lost interest in it and left it unfinished. The larger Healy Construction Puzzle he completed in about one minute. He did the large picture formboard with four errors, two of which he corrected with suggestion and two without suggestion.

When words of three letters were written by the examiner on the board, Harry did not recognize any of them, although he did name one or two of the letters separately.

Dr. Maxfield recommended that Harry be tutored for two hours daily and attend school in the fall on half time, or have three hours tutoring every day with no school.

A fortnight later the tutor called at the Clinic. She lived about a mile away, and Harry frequently came over to play with her little brothers. She thought him intelligent but spoiled and rather reckless. It never occurred to him, she said, to refrain from doing something he wanted to do. If he wanted to take out her horse, for instance, he took it without asking permission. In a way she could not analyze she found something lacking in his behavior.

This same young woman called again at the Clinic two months later. In the meantime Harry had not gone to school, and she had been tutoring him one hour a day, instead of the prescribed two or three hours. Now she was ready to say he was very bright

and had a wonderful memory. He had repeated with much detail a fairy story she had read to him, and defined words very well. Drawing was the best thing he did. It was impossible to hold his attention to one thing for more than ten minutes, and he had no taste whatever for study. The tutor had been making the very natural mistake of bribing him to do his lessons.

Harry had not been getting on well with the brothers of his tutor, though they were obviously of a very different sort from the boys his mother had complained of. They didn't like him because he wouldn't play fair. One afternoon they were playing knuckles. He gave all the other boys their knuckles, but refused to take his. When he came next day for his lesson they were waiting for him, three to one, to give him his knuckles. They beat him up thoroughly before his tutor rescued him wailing from their clutches. She talked with him and tried to make him see what fair play meant, but when he left her house he was still resentful, and kicked over ten bags of leaves that her brothers had raked from the lawn. After he had been fighting, she said, he was unstrung and in no condition to be taught. He was not without his good qualities in her eyes, nevertheless. He was willing to help older people, and sometimes offered to run errands.

His tutor at length persuaded the principal to give Harry another chance in school. He was put into a third grade for spelling, word drill, and part of his arithmetic, into a second grade for history, and a first grade for reading and some arithmetic. With a good effort it was thought he might make the fourth grade. Even if he got into the fourth grade at twelve years, he would still be three years retarded on the education scale. His behavior in school gave perpetual trouble. He pinched the boys, pulled the girls' hair, and was obnoxious generally. His teacher considered him mentally deficient, and though apparently making an effort he was not doing as well as the six-year-old children.

Among the neighbors he still made mischief, ingenious in its variety. He undressed the baby living next door, and its parents had him put under bail. At another house he cut the rubber from a clothes-wringer on the back porch.

The tutor thought Harry was the victim of his parents' neglect, and said that the family was regarded as socially impossible. His father, she said, showed no concern whatever for the boy, and his mother rarely knew where her son was. The tutor's mother approved so little of the way things were going in Harry's family, that she would not permit her daughter to be seen entering their house, although she was willing the boy should come to her home for his lessons.

Dr. Maxfield advised the tutor to punish Harry more severely for refusing to read. On the other hand, he warned her not to interfere between Harry and the boys, and if possible not to betray any sympathy with the attitude of the neighbors toward the family affairs. The report given by the tutor of Harry's behavior and lack of progress in school, confirmed Dr. Maxfield in his opinion that the boy was feeble-minded. While the family life had undoubtedly fostered his tendencies to incorrigibility, it was by no means a sufficient cause to account for his inability to adapt himself to the boys' code of honor, or his failure to respond to teaching. The tutor was advised to continue her work during the rest of the school year, with the object of getting him ready to enter a boarding school. There it would soon appear whether he could get on with other boys in a more wholesome environment.

In the spring Harry's mother brought him to the Clinic for further advice. Her report of his school work was about the same as had been given by the tutor several months before. Harry had gained in height and weight, but had learned almost nothing new. He read words of two and three letters in the first reader. One word of four letters, *nest*, he recognized after spelling it out. One of three letters, *oak*, he failed to recognize. He was told what the other words in the paragraph were, and was immediately asked to read it again, but failed to remember a single one of the words missed on the first reading. As before, his auditory memory span was four digits.

The diagnosis was congenital cerebropathy of uncertain etiology, resulting in feeble-mindedness; grade, low-grade imbecile (Barr classification). Transfer to a training school for feeble-minded children was recommended, and several schools were discussed with the mother.

That she failed to act upon this recommendation was evident about ten days later, when Harry was excluded from the public school as an undesirable pupil. He had been persistently unruly, and the principal found he was learning nothing. His mother reacted in her characteristic manner to what she regarded as a fresh attack upon her boy. She threatened to prosecute the school officials for Harry's exclusion, and was brought to a standstill by a demand from the principal that the boy be examined again at the Clinic, parents and school alike to abide by the result of the examination. She agreed then that a report of the previous examination might be given to the principal. Dr. Maxfield urged her again to send Harry to a training school for backward children. This she refused to do, but was obliged to yield reluctant consent to his transfer to a special class.

Harry has been in the special class for six months. The Clinic has lately received this report from the principal: "I cannot say that Harry has made much progress in learning to read or in his regular school work. However he has surprised us very much with the little things he makes with his hands. He spends a great deal of time in the manual training room, and his progress there is quite remarkable. His deportment is much better, but his attendance is very poor."

Now that Harry's behavior has been noted over a length of time by several competent observers; now that the testimony of the neighbors has been set over against the statements of his mother, and due allowances made for personal bias; now that his accomplishments in clinical tests on two different occasions, and his failure to progress in the branches of the school curriculum are on record, we have in hand abundant material for a mental analysis of the boy. When his performances are analyzed into their psychological elements, and these are rated by the five-point scale upon Dr. Witmer's diagnostic chart, Harry's deficiencies stand out clearly. The first item on the chart, which in a sense qualifies all the other ratings, takes account of the financial position of his family, the care they have given him, and the discipline at home. His parents are not of the wealthiest, but their means are ample and may be rated as four. They have fed and clothed him well, but surely they could have afforded to give Harry better opportunities in the way of schooling. Their care of him may be set down as three, that is, median, but not up to their financial ability. Home discipline could hardly have been worse, and it therefore takes a rating of one on the chart.

The next four items give no concern. Harry is of average height and weight for his age. He is a typical American boy in appearance, and there are no anatomical or physiological anomalies of growth. As he has no markedly feminine traits, he scores five for masculinity. It might seem that his conduct displays a degree of atavism, but this is allowed for in his high rating on the scale of masculinity.

On the culture scales, civilization must be rated five, as the scale of living is luxurious; but education receives only one, because Harry is between four and five years retarded in school progress. His social proficiency is low. He has small efficiency in the operations required to keep a human being above the criterion of sufficiency, and the range of operations is decidedly limited. He is twelve and a half years old, and he cannot read, write, and cipher. For these reasons he has been diagnosed as a low-grade imbecile, which gives him a rating of I^m. Harry's behavior does not by any

means conform to the social requirements for boys. He has not as yet been actually put behind bars as a result of his misconduct, but he has several times been brought into Court and his parents have had to pay for the property he has destroyed. He is ostracized by his schoolmates. We may place him on the borderline of conformity with a rating of two.

The next four items under the heading of vitality are easily disposed of. His energy is excessive and is discharged at a rapid rate. He is tireless in everything not intellectual, and his health is excellent.

Sensibility is adequate. He has good vision and hearing. Taste, smell, touch, and kinesthesia appear to be normal. From his pleasure in giving pain, and his lack of adroitness in escaping pain at the hands of others, we may infer that he has less sensitivity to pain than to other stimuli.

It is in the more particularly psychological qualities that Harry's deficiency is greatest. His analytic concentration is very poor, and persists for a very brief span of time. The distribution of his attention is a little better, and his alertness better still, almost median in fact. His range of interests is below median, although it covers a great variety of mischief.

Harry has good control of movement, good coordination, and plenty of initiative. The complexity of his response is below median, but his vivacity is above median.

Under the general head of imagination we may infer that his imageability is below median. His associability is very poor, as shown in his memory span for four digits and his failure to associate words with their symbols. The complexity of his associations is very limited, and the range of associations is below median.

Among the specific subgroups of imagination, Harry's observation is below median. His understanding of what is expected of him seems adequate; his deficiency is in carrying it out. His planfulness is below median. His intelligence is poor in everything except manual construction and inventing new forms of destructive mischief. In the particular field of memory, Harry's deficiencies are notable. His memory is neither trainable for a short period, nor retentive over a longer period of time.

If any one factor is to be blamed for Harry's long history of insufficiency and misconduct, it must be his handsome appearance and splendid physique. His mother brought him up (or allowed him to bring himself up) by the same system which had made his elder brothers into successful young men. His teachers found it hard to believe that a boy so fine looking, so sturdy, so perfect in health,

HARRY		I --	II --	III Median	IV +	V + +	Date, 1-23-1917
Born Aug., 1904.. F. C. D.		D		C	F		
Height				✓			
Weight {for age for height				✓			
Growth.....	Species			✓			
	Age A. P.			✓			
Sex.....	Masculinity					✓	
	Femininity						
Culture.....	Civilization					✓	
	Education	✓					
Competency.... (social)	Proficiency	LIII					
	Efficiency	✓					
	Operations	✓					
	Conformity		✓				
Vitality.....	Energy					✓	
	Rate					✓	
	Endurance					✓	
	Health					✓	
Sensibility.....	Liminal				✓		(Prob. high threshold for pain)
	Discrimination			✓			
Attention.....	Concentration Anal.	✓					
	Concentration Pers.	✓					
	Distribution		✓				
	Alertness			✓			
	Interests R		✓				
Movement.....	Control				✓		
	Coordination				✓		
	Initiative				✓		
Responsiveness..	(Complexity		✓				
	Vivacity				✓		
Imagination.... (general)	Imageability		✓				
	Associability (M. S.)	✓					
	Complexity	✓					
Imagination.... (specific)	Observation		✓				
	Understanding			✓			
	Planfulness		✓				
Memory.....	Intelligence		✓				
	Trainability	✓					
	Retentiveness	✓					

could possibly be mentally deficient. With mental deficiency one expects to find certain blemishes of body, certain so-called stigmata of degeneracy, and some degree of ill health. Harry had none of these. The people most interested in him turned from one factor to another, from the school to the family, from the family to the community and to his playmates, in quest of a remediable influence, but for years they never thought of searching the boy's mind for the cause of his unruliness. When they finally brought Harry to the Psychological Clinic, even the examiner was impressed by his beauty and was unwilling to pronounce him mentally deficient upon his first performances in mental tests. But the Clinic went on collecting evidence through its social service department over a period of more than a year, and when all the facts were dovetailed together around the results of two clinical examinations of the boy, his mental status was determined beyond the possibility of doubt.

What is to become of Harry remains to be seen. The longer his mother holds out against the judgment of the school, the community, the psychologist,—even against her own better judgment, and keeps her beautiful and irresponsible boy near her to gratify her maternal feeling, just so much the greater are his chances of committing some act which will place him definitely with the class of criminal imbeciles.

CLINIC REPORTS

VII.

When Daniel was first brought to the Psychological Clinic at the University of Pennsylvania in November, 1915, he was six years and eleven months old. At that time he was in a Montessori school, and was referred by his teacher to the Clinic for a mental examination because of his failure to make normal progress. He was a well set up boy, physically attractive, with a pleasing manner. His conversation was good for a child not quite seven.

Daniel's mother brought him to the Clinic and gave the following history: The boy's birth was normal, but at that time, and in fact all during her pregnancy, his mother was nervous and fretful, and much disturbed mentally. Her nervous condition was due to the fact that her husband was drinking heavily and mistreating her. At the time of this examination she had obtained a complete divorce. There was nothing significant in the boy's medical history. There had been two children before Daniel, the first a premature birth at six months, the second, a child born at full term, who died shortly after birth.

Daniel's mother reported that he very easily became excited. He was sent for medical and physical examinations to the University Hospital, with a recommendation to investigate the possibility of epilepsy. The medical examination revealed nothing positive concerning epilepsy, but Daniel's case was pronounced a "hard one," and the examining physician thought the boy a eunuch.

Daniel's social competency and proficiency were not normal for a boy of seven years. Although he cared for himself at the toilet he was unable to dress himself. He did not enter into play normally with other children. He allowed them to impose upon him—a privilege not granted to others by wide-awake boys of seven.

During the mental examination Daniel appeared very nervous. He failed completely on the first trial of the Witmer form board. His performance with the test revealed bad distributive and analytic attention. The significance of his failure is emphasized when it is known that some two year old children are capable of performing the test without instruction. After his failure the blocks were returned to their proper recesses and he was given another chance. He then completed the task twice but his shortest time was 4 m. 45 s. Dr. Young found the longest time made by a four year old child was 60 s.

Daniel's understanding was slow and his persistent attention very bad. This was especially well brought out with the peg board. He did not know the different color names so was told to match the colored pegs, putting in pegs like a sample. For a while he would work attentively, but his attention soon wandered and he would peg aimlessly paying no attention to color. He did not understand the expression "just like that." Daniel displayed poor coordination and muscular control, and his observation was below normal for seven year old children. When tapping blocks which the examiner had previously tapped, he would tap an indefinite number of times and continue until stopped. He knew some of the alphabet names but could not designate the letters. At times he seemed to know A, B and C, but the examiner was not convinced that he was sure of them. His memory span was only four digits. Children of five frequently give six digits. His Binet age was only 3.5 years—showing

a retardation of 3.5 years. This would indicate marked deficiency, especially when coupled with poor results in other tests.

The boy was returned for re-examination in October, 1916. There was no apparent improvement in his mentality. He behaved in a listless, inactive way except when nervously excited. His attention at this time was exceedingly poor, as were also his retentiveness and intelligence.

The diagnosis returned was feeble-mindedness not higher than low-grade imbecility (Barr classification).

NATALIE A. BASSETT, A.M.

VIII.

Saul was brought by his aunt to the Clinic in February because he was backward in school. He was an average sized boy of 13, with normal appearance except that his eyes were crossed. The chief interest in the case lies in the clearness with which the Witmer Cylinders revealed the deficiency of the boy.

In replacing the Cylinders he made a great many errors. The first and second trials were complete failures. In the beginning he placed a large block in a wrong hole. This left him with the next largest block to place. He worked with this for some time and then gave it up and worked with the others. There was apparently no relation between the size of the block and the size of the hole into which he would try to place it. At the end of 5 minutes he had placed only four blocks correctly. In the second trial he began again with the large blocks and for the moment it seemed as though he had some idea of the test. It soon became evident that this was an accidental development. In fact he had learned nothing from the correction of the blocks at the end of the first trial. For the third trial he was told to place the blocks so that they were smooth on top. With this idea in mind he began to place the blocks in the proper openings. In each case he selected the largest block and put it into one opening after another until it was even with the top. It was not until he had placed nine blocks that he left one wrongly placed. In this trial he succeeded in getting all the blocks correct in 4 min. 26 sec. In a fourth trial he became very much interested, and worked rapidly and systematically; time 1 min. 36 sec. It is evident that the test was just beyond his ability, and that he could just learn how to do it.

The formboard was easy for him though he worked slowly and without much show of interest. He had worked with the design blocks before so that his good record with them had little meaning. The Healy Construction tests were also too difficult for him and he had to be shown how to do them several times before he was successful. His memory span was four digits. In school subjects he was not really able to do first grade work.

His home life seems to be unsatisfactory. His mother looked very dull and took little interest in the proceedings. His aunt was the one to answer questions. He gets along poorly with other children, and is not able to dress himself. His babyhood shows some retardation. The first tooth came at 11 months, he walked at 13 months, and talked at 19 months.

The family history shows tuberculosis on both the mother's and father's side. His father's mother and father and the latter's father died of tuberculosis.

The insufficiency of his performances of tests and the non-conformity of his behavior coupled with lack of attention indicate a diagnosis of low grade imbecile. Such a diagnosis is borne out by the individual and family history. As the family is dependent, the recommendation was for institutional care.

DONALD M. MARVIN, *Graduate Student.*

IX.

Adam, 5 years, 2 months old, was brought to the Psychological Clinic by his mother at the instigation of an undergraduate student in Psychology, because he does not talk. His physical development is retarded nearly a year; his height, weight and head girth are all below the minimum for a child of five years. His eyes were recently fitted with glasses to counteract strabismus, but with the glasses he does not see well enough to avoid objects in his path. Test materials were held close to the face for observation. Only one word, "home," was used while he was at the Clinic, but grunts separately vocalized expressed his emotions.

The mental examination showed that Adam is retarded about two years. His work with the formboard and cylinders indicated poor observation, persistency of attention and analytic attention, but this was due, partially at least, to his eye defects. He recognized colors and matched them when one block was used as a model for his selection, but he was unable to choose either the correct colors (one or two) or the correct number of blocks when more than one was shown. He held up one finger when the experimenter did so, but did not hold up two when he saw two. He could imitate by touching four blocks in succession but could not skip from the first to the third, and then to the fourth. It seems probable that his memory span is short and his concentration of attention poor.

The diagnosis was two years of retardation, due to physical causes. It was recommended that he be taken to the Nervous Dispensary to determine whether there was glandular insufficiency to account for the retardation, or whether the poor sight and absence of speech were connected with a brain lesion in the visual and voco-motor centers. The physical examination was not made, but a Wassermann test was suggested.

GLADYS G. IDE,
Graduate Student.

REVIEWS AND CRITICISM.

A Chemical Sign of Life. By Shiro Tashiro. Chicago: Univ. of Chicago Press, 1917. Pp. x+142.

Life cannot be defined as the sum of the attributes of living things. Nevertheless we may conceive that one attribute may be sufficiently constant to serve as the diagnostic sign of life. This is what Mr. Tashiro has demonstrated. "That mechanism," he says, "which enables living matter to respond to the external world . . . may be called the most characteristic thing in life. The chemical accompaniment, or basis, of this mechanism, discovered by the author in nerve fibers, he has hoped to show exists in all forms of living matter, both of plants and animals. It gives a chemical method of distinguishing living from dead tissue, and of measuring the quantity of life."

"A hundred years ago," Mr. Tashiro reminds us, "the electrical sign of life was discovered by Galvani, when he found that animal tissues are a source of electricity. . . . It is now certain that whenever the response to a stimulus takes place in animals or plants—the response which is the sign of life—an electrical change accompanies it. . . . There is always and everywhere," he continues, "an accompanying chemical change of a particular kind which is as sure a sign of life and as invariable an accompaniment of the vital reaction as the electrical change. This chemical sign is the sudden outburst of carbon dioxide which all living things show—plants as well as animals, dry seeds as well as the nerve tissues of the highest mammals—when they are stimulated in any way."

Mr. Tashiro has devised a piece of apparatus called the biometer, which will detect infinitesimal amounts of carbon dioxide. The construction of the apparatus and the method of using it are fully described in the appendix. While we may imagine the high commercial value of being able to discriminate living from dead grain, to a psychologist perhaps the most interesting application of the biometer will be in the study of nerve action. "Whatever may be the nature of that activity going on in our minds," concludes Mr. Tashiro, "we have at least discovered something about its simplest chemical accompaniment. Perhaps the nerve impulse is something in the nature of a propagated explosive wave in a continuous substance. Whether that wave is in the nature of a hydrolysis or an oxidation we cannot say, but at any rate it results in the liberation, in some manner, of carbon dioxide. This substance tells us whether the nerve impulse has passed this way or not. The change which liberates it may be the impulse itself. Three kinds of changes occur, then, in our brains when the nerve impulses are passing—an electrical change, a chemical change, and a psychical change. Which is the fundamental change?"

Third, Fourth, and Fifth Annual Accountings, 1915-16, also Capacity, Ability and Performance in relation to standard scores, and Summary of Tabulations.

By S. A. Courtis. Detroit: Dept. of Cooperative Research, 1916. Bulletin number four.

To those who have followed the steady growth of the Courtis tests in arithmetic, the present bulletin will be a noteworthy document. Filled as it is with statistics and their interpretation, the most striking thing in the pamphlet is Mr. Courtis's original treatment of capacity, ability, and performance. "Capacity," he says, "represents the possibilities of development of the human

nature of the child, the natural endowment of nerves, muscles and brain cells which the child inherits from its parents." He uses the term ability "to mean the degree of skill actually developed by the effect of training upon inherent capacity. . . . Two individuals of different capacity may attain the same ability because of the difference in their training." Performance he defines as "the actual achievement in a given test. . . . The most characteristic thing about performance is its variability. It may or may not afford a reliable idea of ability, just as ability may or may not approximate capacity. . . . Training acting on capacity develops ability. Ability acting under given conditions results in a specific achievement, or score, or performance. Conversely, ability is inferred from performance, but for correct inferences allowance must always be made for the conditions under which the performance takes place. . . . No amount of training will develop capacity; it is the great conditioning factor in school training, and education can be made efficient only as it first determines the inherent capacities of the individual child and then adjusts its training accordingly. . . . A score in a given test represents merely a performance under the given conditions. One should guard against inferring what performance might be under some other conditions. . . . Measurement of capacity and of teaching effort must await, therefore, the careful evaluation of the changes produced in a given time and under given conditions."

"Everyone using results from standard tests as a means of supervision," Mr. Courtis warns, "should realize that results reflect conditions, but do not diagnose them. A low score may be due to faulty timing on the part of the examiner, or to poor teaching, or to an epidemic of measles. A low score is a symptom; the interpretation of the symptom is quite another matter. Poor teaching should be suspected only when every other possibility has been exhausted or where there is confirming evidence from other sources."

Mr. Courtis explains his new graph sheet, which shows the standard relations between speed and accuracy for the median scores of the different grades. He concludes by suggesting, "that for arithmetic the determination of the degree of efficiency that can reasonably be expected under ordinary school conditions, is a practical problem of sufficient value to warrant the concentrated effort of every teacher of arithmetic interested in measurement." Finally he appeals to all "users of the Courtis tests to send in the duplicate records of their results promptly . . . give the tests strictly under standard conditions, make tabulations carefully, accurately. Measure the changes produced by your teaching by giving the tests at the beginning as well as at the end of the term, and finally send in copies of your results. If this were done promptly, conscientiously, by the 2000 superintendents using the Courtis tests, the question of standards of speed and accuracy could be settled in a very few years."

A. T.

NEWS AND COMMENT.

The Pennsylvania Subsidy System.

The State Legislature of Pennsylvania at its current session will probably appropriate something over \$6,000,000—about one-tenth of the total revenue of the Commonwealth for the next two years—to institutions of private charity. The wisdom and justice of these appropriations, especially of the method by

which they are made, are now being more vigorously discussed than at any time in recent years.

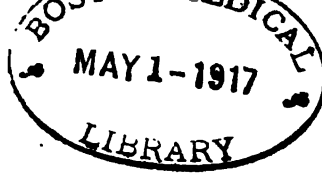
The Public Charities Association concurs with the State Board of Public Charities in disapproval of the suggestion to create a new commission to make binding recommendations to the Legislature with reference to appropriations to private charities. When, however, the Board defends the present method of making appropriations, it appears to the Association that a very different question is raised, requiring a critical examination of the statement of the Board, which appeared in newspapers of December 20, 1916.

It is said, for example, in this statement: "Hearings are held . . . and all institutions are given the chance to present their claims for state aid." In fact, these hearings are necessarily perfunctory, owing to the meagre time allotted to each of the nearly four hundred applicants for aid. They are rarely attended by a majority of the Board, perhaps because the members realize the futility of attempting to form a judgment in any case upon the scant information obtainable at these hearings.

The statement continues: "The actual needs of the institutions are determined." How does the Board measure the needs of these institutions? The Board has stated that it analyses "the need for the institution in its community"; "its necessity to apply for aid"; its "need of financial aid from the state"; its "ability and willingness to be in part self-sustaining." Yet recommendations have been repeatedly made for appropriations to institutions in localities already well supplied with such facilities, as compared with other localities where no such appropriation is recommended: to institutions that receive practically no financial support in their own communities, except from pay patients, and that have apparently made little or no effort to obtain such support; to institutions so heavily endowed by private interests or so largely serving purely local purposes that the state as a whole and its taxpayers are clearly relieved of obligation to repair the relatively small deficit incurred. Appropriations have been granted to institutions that lack facilities required by law, such as laboratories, upon which the State Board of Medical Education and Licensure is now insisting. Do these laboratories come within the definition of "need" employed by the State Board?

The Public Charities Association calls attention to the discrepancies between the Board's recommendations and the final appropriations as made by the last Legislature in 1915:

Only 21 per cent of all private institutions received appropriations equal to the Board's recommendations. Only 6 per cent of all state and semi-state institutions received grants equal to those recommended. Seven private institutions received appropriations against the advice of the Board; and fifteen others failed to receive grants, though the Board had recommended them. These facts are to be regarded as the necessary and logical outcome of a system which leads to extravagance and injustice, in spite of the vigorous efforts of the State Board to bring order out of chaos.



The Psychological Clinic

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VOL. XI, No. 2

APRIL 15, 1917

A PICTURE ARRANGEMENT TEST.

Contributed from the Bureau of Juvenile Research, Columbus, Ohio.

BY ALIDA C. BOWLER, A.M.,¹
Mental Examiner.

1. INTRODUCTION.—In its study of juvenile delinquents, so many of whom are extremely ignorant and some of whom are either foreign-born or come from homes where English is seldom spoken, the Bureau of Juvenile Research continually feels the need of adequately standardized performance tests with which to supplement the Year or Point-Scale findings. Some desirable characteristics of such tests are as follows:

1. That they shall require little or no comprehension or use of language.
2. That they shall catch and hold the interest of the subject.
3. That they be graded in difficulty.
4. That they admit of a scoring which gives some credit for partial success.

The suggestion of a picture-arrangement test, designed primarily to measure logical judgment, seemed to offer some hope of fulfilling these requirements. The suggestion came from Dr. O. Decroly² who tried out a series of such tests with about five hundred school children in Brussels. His material consisted of eleven series of pictures taken from children's books, each series telling a complete though simple story when the members were arranged in the right order. Six of these series contained four scenes each, one contained five, three had six, and one as many as eight scenes. A series, with the scenes arranged in illogical order, was placed in the child's hands with the request that he lay them out in such a way as to make them tell a continuous story. The order in which he placed them

¹ The writer wishes to acknowledge the interest shown, and the helpful suggestions made, in the course of the experiment, by Dr. T. H. Haines, Clinical Director of the Bureau of Juvenile Research, and Dr. Rudolph Fintner of the Department of Psychology of Ohio State University.

² O. Decroly, *Épreuve nouvelle pour l'examen mental et son application aux enfants anormaux. Année psychol.* XX., 1914, 140-159.

and the time taken was recorded. If the order was incorrect he was asked to tell the story as he understood it and his account was noted. This often resulted in the correction of the errors. If he did not seem to understand what was wanted a simple series was used for an example. The subjects were for the most part children in the public and private schools of Brussels. They ranged in age from four to fourteen. There were quite a number of backward and retarded children among them. A few adults were included. Apparently no attempt was made to score partial successes. The aim was rather to find series adapted to different ages. He concludes in general that a series of such tests can be found which will indicate approximately the mental age, and that the measure of time is an important feature of the test. He also finds that children of the leisure classes are on the whole superior to the children of the laboring classes, thus apparently sustaining the contention of Binet with regard to judgment.

So far as is known to the writer the only attempt in this country to make use of Decroly's suggestion is the work of D. K. Frazer at Cornell University. He assembled a collection of "Foxy Grandpa" pictures, each story containing six scenes. There were fifteen series in all, arranged in three groups; I, designated "easy," containing series lettered A-E inclusive; II, designated "medium," H-L inclusive; and III, designated "hard," O-S inclusive. Frazer's method of presentation was very similar to that of Decroly. A standard illogical order was adopted for each series. The general nature of the task was explained to the subject and one of the series was laid out before him with the request that he place the pictures in the right order to make a sensible story. If he arranged it incorrectly he was told that it was wrong and was asked to correct it. If he still thought he was right he was asked to tell the story and this usually caused him to detect his errors. He was always encouraged as much as possible to continue until he discovered his errors. When he had finally arranged it correctly or had "given up" the time was recorded. The only data at hand concerning the Cornell work with these pictures is a table of grouped results from twenty adults (students, men 10, women 10). This table gives the median, average, minimum and maximum times for the different series but no other data.

We obtained copies of these fifteen "Foxy Grandpa" picture series from Mr. Frazer and in the spring of 1915 we tried them out, using his method of presentation, with twenty-five delinquent girls at the Ohio Girls' Industrial Home. It soon became evident that certain of the series permitted more than one logical arrangement.

That is, some of the girls were able to give logical stories, without any very great gaps between scenes, for arrangements which were not "the" story and arrangement looked for and expected by the examiner. These series were eliminated. Six series (B, D, I, J, R and S) were dropped at this time for various reasons. It was also observed that after the first three or four series several of the brighter girls always picked out and placed the last picture first. This was easily explained by the fact that on the last member of each series appeared the signature "Bunny," accompanied by the figure of a rabbit. Therefore, on all the pictures retained, this was obliterated by means of ink, colors and paint-brush.

We now had nine "Foxy Grandpa" stories, each consisting of six scenes. It seemed desirable to have some shorter, simpler series if we were to have a graded test. After much searching in children's books and Sunday supplements, and some wielding of the pen and brush, we had assembled four series of four scenes, and three of five scenes each. We were continually surprised at the difficulty encountered in finding a series of scenes which would tell a story without the aid of written or spoken words, and which would permit of but *one* logical arrangement. One experience in particular serves to illustrate how worthless an *a priori* judgment may be as to the value of a picture. A four-member series which seemed very simple and to permit of but one logical arrangement, was *exactly reversed* by about one-fourth of the children, who were able to furnish a perfectly legitimate, though somewhat fanciful, account.

Our picture-stories now numbered sixteen, roughly graded in difficulty. Still adhering to the Frazer method of presentation these were given to about forty children at a public play-ground in Columbus in the summer of 1915. A careful study of their records resulted in the dropping of one four-member, one five-member, and two six-member series, and the revision of the order. Moreover, the longer we worked the greater became the dissatisfaction with the method of presentation. In the first place, although we were desirous of eliminating the use of language, we were asking the subject to tell a story! In the second place, by letting the subject know he was wrong, again and again, we were deliberately opening the door to some very unwelcome visitors, namely, discouragement, embarrassment, and loss of confidence,—all factors which tend so to influence the attitude of a subject as to render him incapable of putting forth his best efforts. And lastly, how were we ever to standardize a method which included in its instructions "encourage the subject as much as possible" and "record the time when he either succeeds or gives up?" Would not the quantity and quality of encouragement

vary with every examiner and even with the same examiner from day to day?

The two particular problems demanding solution at this point in the work were: (1) to determine the most satisfactory method of procedure in administering the test; and (2) to discover the less desirable pictures and discard them until we should have a test which could be completed in from five to ten minutes, yet be graded in difficulty. The first of these problems was solved before the main body of work was begun. But the full twelve series was given to about six hundred children before it was considered that sufficient data had been gathered to warrant the choosing of the final test series. The percentages of these six hundred children correctly completing each picture at each age from ten to fourteen inclusive, were computed and curves plotted from these figures. The curves seemed to indicate that some of the series would be of little value as mental tests, being quite as difficult for fourteen-year-old children as for ten-year olds, more difficult for one sex than the other, and showing some very curious ups and downs. After careful consideration six of the original twelve were chosen to constitute the graded series for a picture arrangement test. The materials and method of procedure finally decided upon, and the results obtained from their use with some one thousand and twelve individuals, will be discussed in the following pages.

2. MATERIALS.—The test material includes six series of pictures, each series telling a complete story. They will be designated hereafter by the letters X, A, B, C, D, and E. The plan of each story follows:

X. The Stolen Slipper (4 scenes). X_1 , an old woman, evidently just awakened, is seated in an arm-chair. She has on one slipper, while a pup is making off with the other; X_2 , the old woman, standing in the door, sees the pup in the yard with her slipper. X_3 , she gives chase. X_4 , she has caught the poor pup and is spanking him with the recovered slipper.

A. The Spilled Ink (4 scenes). A_1 , a little girl is standing beside a table on which are a blank sheet of paper, a pen, a bottle of ink, and a sleeping kitten. A_2 , the little girl has climbed on a chair and is scribbling on the paper; kitten has awakened. A_3 , the kitten upsets the ink. A_4 , the little girl is standing on the floor, ink dripping from her hands and dress and tears from her eyes.

B. The Little Flirt (4 scenes). B_1 , on a bench beside a road are seated a little girl and boy. Some distance up the road is another little boy with a bag in his hand. B_2 , the second boy has come up to the bench. B_3 , he has seated himself beside the girl and is evidently

inviting her to go with him. B₄, the little girl, with a stick of candy in her hand, goes off with the second boy, much to the chagrin of her former companion.

C. Foxy Grandpa and the Swans (6 scenes). C₁, the boys, in a shed, are dressing up like swans while in the distance Foxy Grandpa and little brother are visible, walking towards the pond. C₂, Foxy Grandpa and brother, about to feed the real swans, are startled by the appearance of the make-believe birds. C₃, they start to run. C₄, the real swans take after the make-believe. C₅, hot in pursuit. C₆, the false heads have fallen off, the boys have climbed a tree to escape the angry birds, and Foxy Grandpa and brother have returned to laugh at them.

D. The Elephant and the Bees (6 scenes). D₁, little brother is excitedly telling Foxy Grandpa something and pointing out into the yard. D₂, Foxy Grandpa, having gone out to investigate, is frightened by the appearance of an elephant. D₃, it chases him. D₄, he runs among the bee-hives, overturning one. D₅, the angry bees attack the elephant which comes apart, revealing the boys inside. D₆, Foxy Grandpa and brother are laughing at the boys, whose hands, arms and legs are swollen and bandaged.

E. Foxy Grandpa and the Tramp (6 scenes). E₁, Foxy Grandpa, who has been reading a newspaper, is seated in an armchair in the yard. Little brother is telling him to look at the tough tramp who is peering over the high board fence. E₂, Foxy Grandpa picks up the foot-stool. E₃, he hurls it, hitting the tramp squarely in the head. E₄, the stool falls to the ground but to the amazement of Foxy Grandpa and brother the tramp is apparently unharmed. E₅, Foxy Grandpa has made a noose of the clothesline which lay near by and is lassoing the impudent tramp. E₆, he has captured the intruder which proves to be merely a clothes-pole dressed up, and in its place appear the grinning faces of the boys.

The size of each individual pictured scene is about 4 by 4½ inches, so that the whole packet of pictures is small and easily carried. They are done in colors to attract the child's attention. Moreover, the stories are purposely humorous in character with a view to holding his attention by introducing the element of amusement.

3. PROCEDURE.—The subject was seated at a table opposite the examiner who recorded his name, age, birthday, and school grade. E then laid out series X, in its standard illogical order, directly in front of S, saying as he did so, "These little pictures will tell a funny story if you put them in the right order. They are all mixed up now. You put them in a row here (pointing) so that they will tell a good story." Usually S started in at once. If he hesitated and seemed

at a loss, E asked "which one do you think ought to come first?" and when he pointed to one said, "All right, that's good, put that one here (placing it) and now put up the one you think is next (and so on)." If he completed X correctly he was commended. If it was incorrect he was told that it was not quite right and asked if he could fix it. If he was unable to do so it was arranged for him. Records of the time and arrangements of X were not kept as it was intended solely for purposes of illustration, to make sure that S was given a complete exposition of just what was wanted. As soon as X was finished it was removed and A laid out in its standard illogical order with the remark, "And now make these little pictures tell a good story." The stop-watch was started as the last picture was placed in front of S. When he indicated that he had finished the time was taken, the series removed, and his arrangement recorded. A, C, D, and E were then given in exactly the same manner. After the X series S was never told when he had made mistakes. He was made to feel that he was doing well. Inconspicuous lettering and numbering on the back of each picture rendered it easy for E to see at a glance as he picked up the finished series what the arrangement was. The "standard illogical order" adopted for the six series is as follows:

X, 2-4-3-1	C, 2-4-6-5-3-1
A, 3-2-4-1	D, 6-4-1-5-3-2
B, 4-2-1-3	E, 2-4-6-5-3-1

4. SUBJECTS.¹—During the school year 1915-1916 the test was given by the author to some 961 children in the public schools of Columbus. Of these, 710 were in two grade schools in different sections of the city, 95 were in a junior high school, and 156 were in the Commercial High School. They came, of course, from different social classes, but there were very few cases of actual poverty, or of foreign parentage, among them. No attempt was made to select subjects. They were taken just as they came, one after another, straight through the grades. Only one individual was rejected and that because of extreme myopia. It is possible that the fifteen and sixteen year results might have been somewhat higher had more subjects been secured or had a general high school been invaded. For the commercial high school is, to some extent, a selective agent. The distribution by sex was about even, there being in all 490 boys and 471 girls. The ages ranged from six to sixteen. Table I shows the distribution of the 961 cases by age and grade.

¹ The writer wishes here to acknowledge the kindness and courtesy of Mrs. Margaret McNamara, Chief Matron of the Ohio Girls' Industrial School, Mr. J. A. Shawan, Superintendent of Schools, Miss Lucy Thompson, Principal of Avondale School, Miss Margaret H. Mulligan, Principal of Ohio Avenue School, Mr. Townsend, Principal of the Commercial High School, Columbus, Ohio, and the Department of Psychology of Ohio State University.

Age	No. of Cases	Grades																High School					
		1B	1A	2B	2A	3B	3A	4B	4A	5B	5A	6B	6A	7B	7A	8B	8A	1B	1A	2B	2A	3B	3A
5.5-6.0	1																						
6.0-6.5	19	10	9																				
6.5-7.0	14	7	6	1																			
7.0-7.5	26	4	5	10	6	1																	
7.5-8.0	39		1	13	19	6																	
8.0-8.5	39	1	1	4	6	5	21	3	3														
8.5-9.0	42			1	5	7	7	7	5	1													
9.0-9.5	53			2		3	18	5	19		2												
9.5-10.0	56					3	7	11	20	8	5												
10.0-10.5	55					1	5	9	11	12	14	1	1										
10.5-11.0	58					1	2	2	6	13	25	8	7										
11.0-11.5	42						4	2	5	10	6	6	7										
11.5-12.0	48						1	1	3	4	9	14	6	6									
12.0-12.5	51							1	3	3	6	10	8	6	10	1	3						
12.5-13.0	49								1	1	4	9	4	8	10	5	5	2					
13.0-13.5	64									2	3	7	4	10	11	8	15	4					
13.5-14.0	50							1			2	2	5	5	6	5	18	10	1				
14.0-14.5	63								1		2	3	4	2	8	4	15	18	5				
14.5-15.0	75									1	2	1	2	3	3	3	19	32	8	2			
15.0-15.5	73									1	1	1	1	4	4	2	9	20	14	8	5	1	
15.5-16.0	37									1	2	1	2	3	2	8	19				1		
16.0-16.5	8									2						3							
	961	22	17	36	40	47	52	44	71	51	83	65	40	51	61	30	95	105	28	11	8	2	2

TABLE I.—THE DISTRIBUTION BY AGE AND GRADE OF THE 961 SCHOOL CHILDREN.

In addition to the school children the test was performed by fifty-one adults, who were students at the Ohio State University summer school. Their ages run from nineteen to forty-nine, the median being twenty-six. Thirty-four of them are teachers, fourteen are undergraduate and two are graduate students, and one is a Y. W. C. A. secretary.

5. RESULTS.—The first attempt to discover just what there was of value in this accumulating mass of data came with the plotting of the curves shown in Figure I, which indicate the percentage of correct arrangements at each age for the five series A-E inclusive.

In grouping by ages, age was reckoned from the nearest birthday. That is, the six-year group includes all those from five years and six months, to six years and five months, the seven-year group includes all those from six years and six months, to seven years and five months, etc. Table II gives the actual percentages from which these curves were drawn, together with the number of boys and girls tested at each age. The curves show clearly that we have achieved a graded series, ranging from A, which is extremely easy for all children who are nine years or more, to E, which is too difficult to be correctly arranged by fifty per cent at any age.

The next step was to regard the test as a whole and determine what percentage at each age correctly arranged one or more series, what percentage correctly arranged two or more, etc.

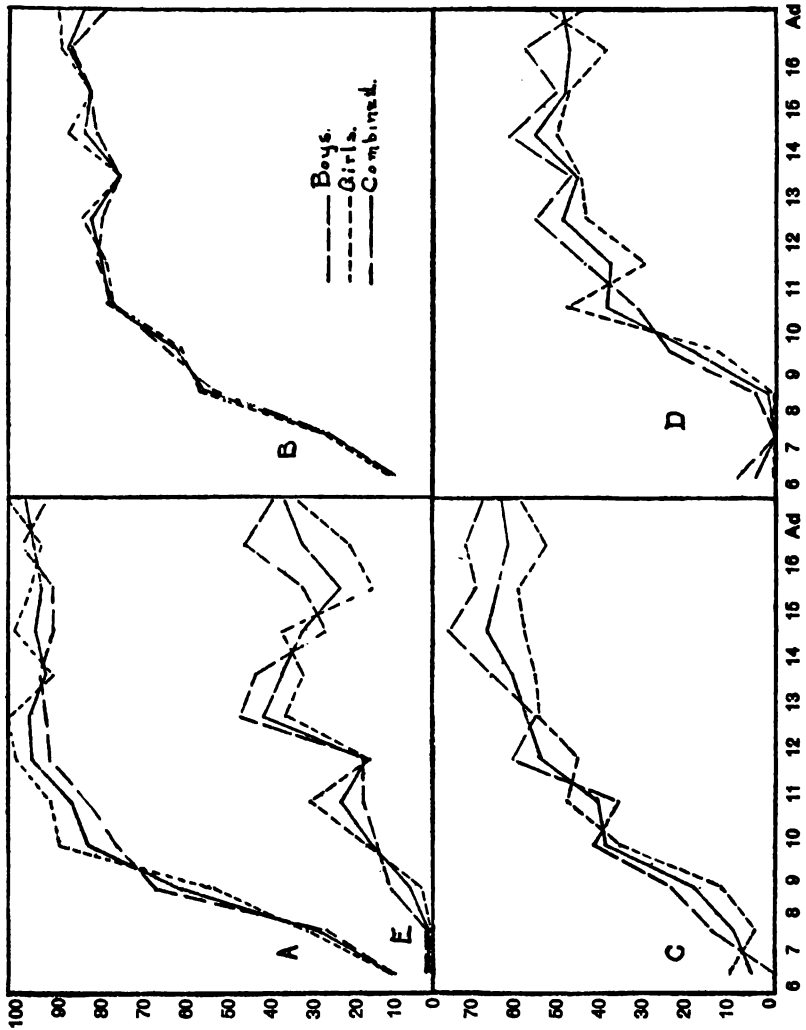


FIGURE I.—CURVES SHOWING PERCENTAGE OF CORRECT ARRANGEMENTS FOR EACH SEX AND AGE GROUP; CURVE A FOR SERIES A, CURVE B FOR SERIES B, ETC.

Age	Number Tested			Series (Percentage of Correct Arrangements)														
				A			B			C			D			E		
	B.	G.	Tot.	B.	G.	Tot.	B.	G.	Tot.	B.	G.	Tot.	B.	G.	Tot.	B.	G.	Tot.
6	11	9	20	9	11	10	9	11	10	0	11	6	9	0	5	0	0	0
7	20	20	40	25	30	27	25	25	25	15	5	10	0	0	0	0	0	0
8	40	38	78	65	52	59	52	55	54	25	13	19	5	0	2	10	3	6
9	46	49	95	74	88	81	63	59	61	43	37	40	26	14	20	12	16	15
10	60	51	111	81	90	85	75	76	75	37	49	42	33	49	40	17	29	22
11	53	47	100	90	98	94	79	77	78	62	47	55	45	32	39	17	15	16
12	56	43	99	91	100	95	78	83	81	57	56	56	57	44	51	45	35	40
13	55	58	113	92	89	91	74	74	74	67	57	62	49	46	47	42	31	26
14	57	52	109	89	98	93	79	86	82	77	59	68	63	52	57	26	36	31
15	58	65	123	89	95	92	81	81	81	71	61	66	52	49	50	31	14	22
16	34	39	73	97	92	94	85	87	86	78	54	63	59	41	49	44	20	31
Adult	26	25	51	92	100	96	77	88	82	69	60	64	46	56	51	33	32	35

TABLE II.—NUMBER OF BOYS AND GIRLS TESTED AT EACH AGE AND PERCENTAGE OF CORRECT ARRANGEMENTS OF EACH SERIES FOR EACH SEX AND AGE GROUP.

Age	Number Tested			1 Correct			2 Correct			3 Correct			4 Correct		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
6	11	9	20	18	33	25	9	0	5	0	0	0	0	0	0
7	20	20	40	50	40	45	15	15	15	5	5	5	0	0	0
8	40	38	78	82	66	74	50	47	49	15	10	13	5	0	3
9	46	49	95	85	94	89	69	59	64	45	37	41	15	18	17
10	60	51	111	95	96	95	75	86	80	45	68	55	27	33	29
11	53	47	100	96	100	98	81	87	84	68	53	61	34	23	29
12	56	43	99	98	100	99	94	86	89	73	69	72	46	46	46
13	55	58	113	98	95	96	85	86	85	71	62	66	47	36	41
14	57	52	109	96	100	98	91	94	92	77	67	72	49	52	50
15	58	65	123	100	98	99	95	87	91	71	74	72	41	35	38
16	34	39	73	100	97	98	97	92	94	83	61	74	56	33	44
Adult	26	25	51	100	100	100	84	96	90	65	72	68	46	52	49

TABLE III.—PERCENTAGES CORRECTLY ARRANGING ONE OR MORE SERIES, TWO OR MORE, ETC., FOR EACH AGE AND SEX GROUP.

The figures yielded by this method appear in Table III. An inspection of these figures, with a view to standardization, seems to indicate: (1) That a normal eight-year-old ought to arrange one out of five correctly, 74 per cent doing so at that age, while only 45 per cent did so at seven years. (2) That two out of five would be a hard nine-year test, rising from 49 per cent at eight to 64 per cent at nine, or an easy ten-year test, at which point 80 per cent are able to pass it. (3) That while three out of five are arranged correctly by 68 per cent of the girls at ten years and but 45 per cent of the boys, at eleven years the conditions are exactly reversed, 68 per cent of the boys passing and but 53 per cent of the girls; from twelve years on no age drops below 60 per cent, but further data are necessary before this can be straightened up, there being no plausible explanation of the irregularity. (4) That to arrange four out of five would be too

great a demand at any age, the curve reaching 60 per cent at no point. (5) That the greater the demand the more irregular the girls' curve becomes. (6) That there is no decided or sustained increase in ability beyond twelve years (adults included) shown in any of these curves.

Up to this point no attempt had been made to evaluate partially correct responses. This we were especially desirous of doing but the devising of a method of scoring which should be reasonably free from objections proved to be an extremely difficult task. Four different schemes were tried out before a decision was reached. A description of each follows.

6. METHODS OF SCORING.—*Method 1.*—A simple mechanical device which we designated the gain-in-place method was first suggested. If a member was shifted one place from its proper position in the series one point was scored against it, if it were three places removed, three against it, and so on. In order to make the score magnitude and consequently the score differences greater, the one point was increased to three. Thus a 1-3-2-4 arrangement of A would receive -3 as its score, a 1-3-2-5-4-6 arrangement of C would score -6, etc. Only those which *gained* place were scored. The best possible score for the test would therefore be 0, the worse possible score -105.

Objections to this method were that it gave no more credit for the correct arrangement of E than for A; and that it assumed the gaps between scenes to be of equal weight, whereas this was obviously not true. For example a 1-2-4-3 arrangement of B and a 2-1-3-4 would both be scored -3. Yet the former occurred 69 times, the latter but once. Another objection to this method is that it laid too much stress upon the *mere position* of a series member with respect to the perfect arrangement and too little upon possible relations between the members as placed. Is 1-4-3-2 (scored -6) better than 4-1-2-3 (scored -9)? In the former there is a correct placing of 1, but no logical sequence, in the latter no correct position of members with respect to the perfect arrangement, but 1, 2, and 3 correctly placed with respect to each other. Likewise a 6-1-2-3-4-5 arrangement of D would be scored -15, a 1-2-3-4-6-5 arrangement -3. Yet the former occurred 178 times, the latter once. Which would seem to have a more reasonable basis? In other words this method was *too* mechanical.

Method 2.—Twenty points credit were given for the correct arrangement of each of the five series. Arbitrary assignments of 15, 10, and 5 points credit were made for such partially correct perform-

ances as seemed warranted by the frequency of occurrence. The guide for scoring by this method is:

A		B		C		D		E	
1-2-3-4	20	1-2-3-4	20	1-2-3-4-5-6	20	1-2-3-4-5-6	20	1-2-3-4-5-6	20
		1-2-4-3	5	1-2-3-4-6-5	5	1-6-2-3-4-5	10	1-2-4-3-5-6	15
		1-3-2-4	5	2-3-4-5-6-1	10	2-3-4-5-1-6	5	1-3-4-5-6-2	5
						6-1-2-3-4-5	15	1-2-4-5-6-3	5
								1-4-2-3-5-6	10
								2-1-3-4-5-6	5
								2-1-4-3-5-6	10
								2-4-1-3-5-6	5

The same objection held for this method as for the first in so far as it gave the same credit for complete success in each series from the easiest to the hardest. Moreover, the credit given to partial successes was determined by individual judgment, aided and guided, to be sure, by a consideration of the frequency of occurrence, but even so not resting upon a sufficiently solid foundation to be easily defensible in the face of criticism. Still another solution was therefore sought.

Method 3.—This scheme rests upon a purely empirical base. All arrangements of each series which were made by the 961 school children were recorded, together with the number of times each occurred. The number of occurrences was then converted into percentage of the whole. It was found that A was correctly arranged by 84 per cent, B by 72 per cent, C by 51 per cent, D by 38 per cent, and E by 23 per cent. Assigning 38 points credit to E, by inverse proportion D would then be worth 22, C 17, B 12, and A 9 points. By increasing A to 10 and C to 18 the perfect total score for the test became 100 points. Similarly, by means of proportion, score values for the partially correct responses were worked out. Thus:

E				D			
Arrangement	Freq.	Per cent	Score	Arrangement	Freq.	Per cent	Score
1-2-3-4-5-6	225	23.0	38.0	1-2-3-4-5-6	372	39	22
1-2-4-3-5-6	88	9.1	14.8	6-1-2-3-4-5	178	18	10
2-1-4-3-5-6	64	6.6	10.6	1-6-2-3-4-5	124	13	7

All arrangements which commanded a score of less than .5 were scored 0. But it was observed that some arrangements, occurring frequently among the very young or very dull but rarely among the brighter children, namely, the placing of the pictures in the same order in which they were laid out or beginning at the other end and exactly

reversing them, would receive credit, which they evidently did not deserve. Such arrangements were therefore thrown into the no-credit group. The arrangements receiving credit by this method, with the scores for each, are as follows:

A		B		C		D		E	
1-2-3-4	10	1-2-3-4	12.0	1-2-3-4-5-6	18.0	1-2-3-4-5-6	22.0	1-2-3-4-5-6	38.0
		1-2-4-3	1.2	1-2-3-4-6-5	1.6	1-2-3-5-4-6	.5	1-2-3-4-6-5	1.1
		1-3-2-4	.9	1-2-4-5-6-3	.7	1-6-2-3-4-5	.7	1-2-3-5-6-4	.8
				1-2-6-3-4-5	.7	1-6-2-3-5-4	.7	1-2-4-3-5-6	14.8
				2-3-4-5-6-1	2.5	2-3-4-5-1-6	1.3	1-2-4-3-6-5	.8
				2-4-5-6-3-1	.5	6-1-2-3-4-5	10.0	1-2-3-5-4-6	.5
						6-1-2-3-5-4	.7	1-2-4-5-3-6	6.8
						6-1-2-4-3-5	.5	1-2-4-5-6-3	7.2
						6-1-4-5-3-2	.7	1-2-4-6-5-3	8.4
								1-2-4-6-3-5	.5
								1-2-5-3-4-6	.5
								1-3-2-4-5-6	.6
								1-3-5-2-4-6	.8
								1-3-6-6-2-4	.5
								1-4-2-3-5-6	10.
								1-4-2-5-3-6	.8
								1-4-2-5-6-3	.8
								1-4-5-6-2-3	1.5
								2-1-3-4-5-6	4.2
								2-1-4-3-5-6	10.6
								2-1-4-5-3-6	2.3
								2-1-4-5-6-3	.6
								2-1-4-6-6-3	3.8
								2-1-4-6-3-3	1.1
								2-3-1-4-5-6	.6
								2-3-4-5-6-1	.6
								2-4-1-3-5-6	7.2
								2-4-1-5-3-6	1.1
								2-4-1-5-6-3	1.1
								2-4-1-6-5-3	.8
								2-4-3-1-5-6	.8
								2-4-3-5-1-6	.6
								2-4-5-3-1-6	.5
								2-4-5-3-6-1	.6
								2-4-5-6-1-3	1.6
								2-4-6-6-3-1	4.9
								2-4-6-3-5-1	.6
								2-4-6-6-1-3	.5
								2-6-4-5-3-1	.6
								4-1-2-3-5-6	1.1
								4-2-3-1-5-6	.6
								4-2-6-5-3-1	.8

Method 4.—In order to determine definitely whether these arrangements referred to above (putting up the pictures in the same illogical order or its exact reversal) were not typical of the very dull or very young children and whether they could not drop into the no-credit group if these were excluded, still another device was tried. This time only those records were used which showed two or more of the series correctly arranged. This would seem to insure that the individuals on whom we were basing our credit system had a definite idea of what was desired and possessed a certain amount of logical judgment. There were 748 cases fulfilling this requirement. From their records, in the manner described in Method 3, the following score-system was developed. The score was made to read in half-credits each time. That is, .3 to .7 inclusive was scored .5, .8 to 1.3 was scored 1.0, 1.3 to 1.7 was scored 1.5, etc. In the case of all

series except the most difficult one the expected happened, the replacing in illogical order dropping to the no-credit class. In the case of E the number of such arrangements dropped from 34 to 9 but would still have received some credit, had they not been eliminated. No credit was given if less than one per cent showed the arrangement. Below is the guide for scoring in this manner:

A		B		C		D		E	
1-2-3-4	11	1-2-3-4	13.0	1-2-3-4-5-6	17.	1-2-3-4-5-6	23.	1-2-3-4-5-6	37.
		1-2-4-3	.5	1-2-3-4-6-5	1.	1-2-3-5-4-6	.5	1-2-3-4-6-5	1.5
		1-3-2-4	.5	1-2-4-5-3-6	.5	1-6-2-3-4-5	5.5	1-2-4-3-5-6	12.
				1-2-4-5-6-3	.5	1-6-2-3-5-4	.5	1-2-4-5-3-6	5.5
				1-2-6-3-4-5	.5	2-3-4-5-1-6	1.	1-2-4-5-6-3	6.5
				1-2-6-5-3-4	.5	6-1-2-3-4-5	8.	1-2-6-5-3-4	2.
				2-1-3-4-5-6	.5	6-1-2-3-5-4	.5	1-4-2-3-5-6	9.5
				2-3-4-5-6-1	2.5			2-1-3-4-5-6	4.
								2-1-4-3-5-6	10.
								2-1-4-5-3-6	1.5
								2-1-4-5-6-3	3.
								2-4-1-3-5-6	6.
								2-4-5-6-3-1	3.

The records of all of the school children were scored by each of the above methods. Below are several sample scores. They are placed in pairs for purposes of comparison, so as to emphasize the fact that identical scores by Method I show very great differences when scored by other methods.

Curves were plotted showing the median scores at each age from six to sixteen for the four methods. Bearing in mind the mechanical character of Method 1 and the objections that arose as it was used, it is surprising to note how even is the curve that rises from its medians. The curve for Method 2 was particularly gratifying from the point of view of one seeking a standardization by age, but as remarked above, the method by which it was derived savors too much of the "this must be best because we think it is" attitude. Therefore, in the end, it was deemed best to adopt Method 4 as the

Arrangements					Scores by Four Methods			
A	B	C	D	E	M. 1	M. 2	M. 3	M. 4
Correct	Correct	Correct	Correct	Correct	0	100	100	100
Correct	1-3-2-4	1-2-3-4-6-5	Correct	1-2-3-4-6-5	-9	50	35.6	36
Correct	Correct	Correct	1-5-2-3-4-6	Correct	-9	80	78	78
Correct	Correct	1-2-6-4-5-3	1-2-3-5-4-6	1-2-4-3-5-6	-15	55	37.3	36.5
Correct	Correct	Correct	6-1-2-3-4-5	Correct	+15	95	88	86
Correct	3-4-1-2	1-2-3-4-6-5	1-2-3-4-6-5	6-1-2-4-5-3	-33	25	11.6	12
Correct	Correct	2-3-4-5-6-1	6-1-2-3-4-5	1-2-4-3-5-6	-33	80	49.3	46.5
2-1-4-3	3-2-4-1	1-2-4-6-5-3	1-6-3-2-4-5	2-4-1-6-5-3	-45	0	.8	0
Correct	Correct	3-6-3-4-5-1	6-1-2-3-4-5	2-4-3-5-6-1	-45	55	32	32

most reasonable device for scoring this particular picture arrangement test. In the following discussions scorings by this method only are used.

Graphs were drawn of the distribution of the scores made in the 8, 9, 10, 11, 12, 14, and 16 year groups, and the adults. For convenience, the one hundred possible scores were divided into groups as indicated ($a=0-10.5$, $b=11-23.5$, $c=24-40.5$, $d=41-62.5$, $e=63-99.5$, $f=100$). The division was made in this manner so that the first group would include those who did not correctly complete any one (the least credit for correct completion of any series being 11), the second group would include those who did one correctly with partial success in one or two others, etc. The ability (whatever it may be) seems rather widely distributed. Eleven and twelve years each show one decided mode, falling at d (41-62.5) for eleven, and e (63-99.5) for twelve. At nine years practically the same number make b , c , and d (ranging from 11 to 62.5). The adult group shows a mode at e (63-99.5) with rather high identical levels for c , d , and f . Indications are that a few quite young children are very well endowed with this particular line of ability while a corresponding number of older children and adults are poorly equipped with it.

A somewhat different device for showing the distribution of the scores by ages is that used in Table IV from the figures in which the curves in Figure II are plotted. In this table are given the maximum, the twenty-five percentile (below which 75 per cent fall), the median, the 75 percentile (below which 25 per cent fall) and the minimum scores for each age. The adult group is included. The sexes are separated.

Boys							Girls						
Age	No. Cases	Min.	75 %ile	Med.	25 %ile	Max.	Age	No. Cases	Min.	75 %ile	Med.	25 %ile	Max.
6	11	0	0	0	5.0	41.5	6	9	0	0	0	12	25
7	20	0	0	10.5	17.5	49	7	20	0	0	1.0	18.5	56.5
8	40	0	12	24	36	100	8	38	0	5.5	15.5	37.5	69
9	46	0	17.5	40	59	100	9	49	0	18.5	31.5	58	100
10	60	0.5	27.5	43.5	66	100	10	51	0	40	52	75.5	100
11	83	0	41	53	72.5	100	11	47	16.5	31.5	46.5	65	100
12	56	11	46.5	64.5	85.5	100	12	43	11	40	63	80	100
13	55	1	39	67	90.5	100	13	58	0	35	57	78	100
14	57	12	50	63	78	100	14	52	12.5	40	67	86	100
15	58	13	42.5	56	78	100	15	65	10	41.5	56.5	73	100
16	34	18	52	71.5	86.5	100	16	39	10	38.5	53	68.5	100
Adult	26	17	43.5	66	100	100	Adult	25	29.5	47.5	67	86	100

TABLE IV.—SHOWING MINIMUM, 75 PERCENTILE, MEDIAN, 25 PERCENTILE AND MAXIMUM SCORES.

It will be observed from a comparison of the charts in Figure II, that the boys are slightly superior to the girls at all ages except

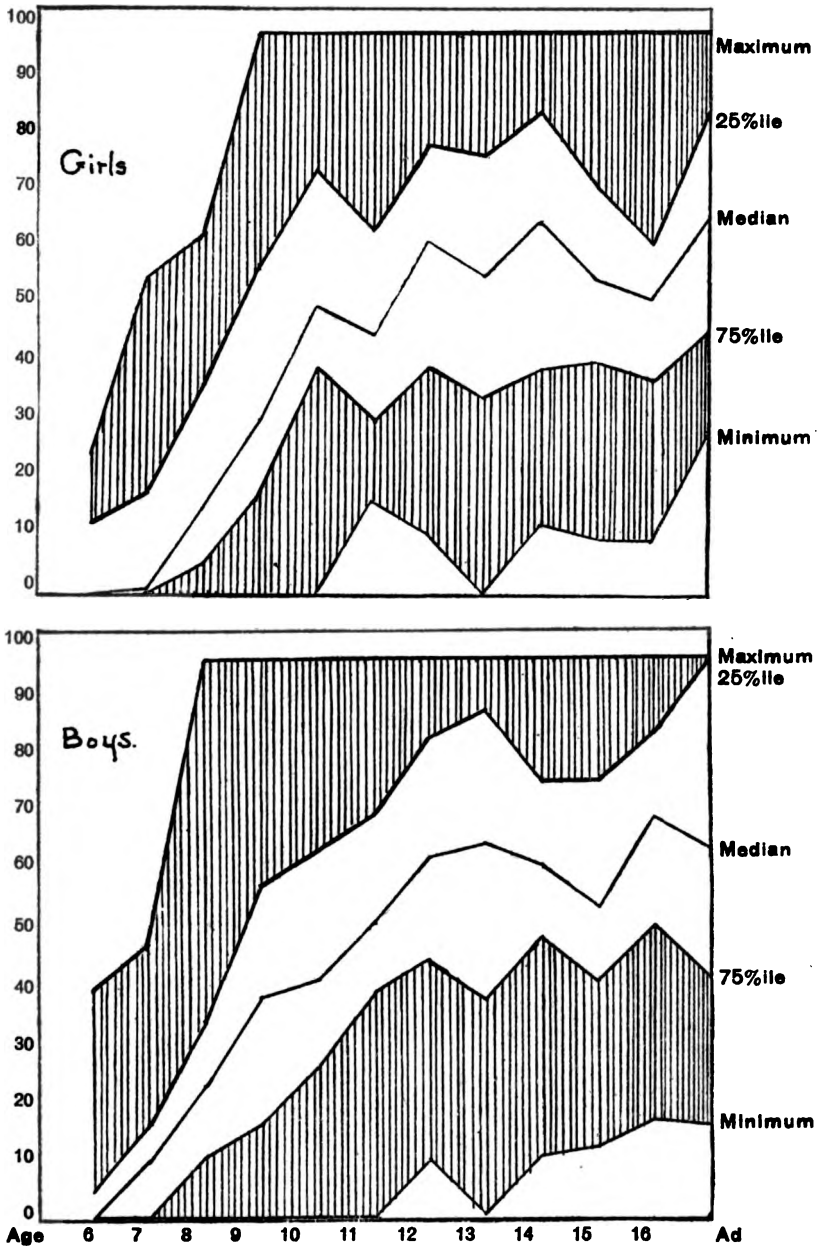


FIGURE II.—CHARTS SHOWING DISTRIBUTION OF TEST SCORES BY AGES.

10, 14, and 15. The greatest difference is at sixteen, one of the smallest groups. Since the difference is small and not persistent the chances are that a multiplication of cases will tend to bring them closer together. Neither is the range of variation very different for the two sexes. Mrs. Woolley,¹ in her work with adolescents, found that the girls showed a greater number of very poor individuals and a smaller number of very good as compared with the boys. In this test 11 per cent of the boys and 10 per cent of the girls score 100, and 17 per cent of the boys and 18 per cent of the girls score less than 24. The numbers of very good and of very poor individuals seem therefore to be about evenly divided.

One striking feature of the curves is the failure to show any decided or sustained increase in ability beyond the tenth or at most beyond the twelfth year. This was observed when the results were treated in the all-or-none, correct-or-not-correct manner. In an effort to discover an explanation of the relatively low 15 and 16 year levels, it was observed that at sixteen years 30 per cent of the subjects were more than one year behind the grade expected if they entered at six years and progressed at the normal rate. At fifteen 18 per cent were more than one year behind, at fourteen 17 per cent, while at the relatively high ten-year level only 3 per cent were so retarded. It was thought that this might explain the irregularity but a closer study revealed, that when those individuals who were more than one year behind grade were eliminated from the sixteen year group the median remained at exactly the same point; and the minimum also remained the same. So that apparently, so far as this test is concerned, the ability of these educationally retarded individuals parallels that of the up to grade group. It would not do to assume that a low or high level was caused by an over-weighting of the group with educationally retarded or accelerated individuals.

So far the time element, which Decroly considered of prime importance, has been disregarded. This is almost rendered necessary by the new procedure which accepts incorrect as well as correct responses. The time spent upon an incorrect completion would have little meaning. As a matter of interest the time medians were determined for those cases correctly completing such series. These medians (expressed in seconds) are shown on page 53.

There is for each series a definite decrease in time with increase in age, but the number of cases on which the figures are based is in many instances comparatively small. Again it will be observed that the most decided differences occur before the twelfth year.

¹ Woolley, Helen Thompson. *New Scale of Mental and Physical Measurements for Adolescents and Some of its Uses.* *Jour. of Educational Psychol.* Vol. VI, No. 9, p. 521.

Age	A		B		C		D		E	
	No. of Cases	Time	No. of Cases	Time	No. of Cases	Time	No. of Cases	Time	No. of Cases	Time
6	2	68	2	42	1	134	1	96	0	
7	11	49	9	42	4	115	0		0	
8	45	31	38	36	15	81	2	71	5	90
9	70	29	53	31	36	69	19	72	12	90
10	57	24	79	24	43	61	41	53	22	71
11	90	21	74	22	50	51	37	52	14	57
12	90	20	79	22	53	50	47	46	37	63
13	99	15	83	19	68	48	54	50	41	60
14	102	17	90	18	75	44	63	40	32	50
15	102	16	100	19	81	45	63	41	33	52
16	69	16	63	18	43	44	37	39	26	44

Of particular interest to the examiner who is using the test for practical purposes are the different types of reaction to the task. There is the careful worker who looks at all the pictures and evidently "gets" the scheme before he begins to arrange at all. There is the one who starts out hastily and works by a sort of trial and error method, putting them up and changing them about as he detects his errors until he is finally satisfied. Some work so rapidly and carelessly as not to seem to think at all. Especially interesting is the one who is evidently influenced by suggestion; that is, he can not get away from the illogical order in which he first sees them. He can not strike out on his own initiative, or even if he does place one or two correctly, when he comes to a difficult point he is likely to accept the suggestion offered by whatever order the remainder of the scenes happen to have assumed. This type is especially prevalent among the younger and the very dull children. Then there is the one who can not grasp the idea of connection between the scenes. Quite frequently among the six year olds the child wanted to tell a little story about each separate picture.

Just what is the nature of the ability which this test measures is uncertain. Decroly seems to consider it as testing primarily logical judgment. Yet he too points out that the difficulties involved are dependent not only on the length of a series but upon differences of meaning, and details of form, of color, of arrangement, and of perspective. Certainly it does call for rather close attention, keen perception, appreciation of the meaning of the perceived details, and logical judgment, based on analysis and imagination. The mental activity involved is of a decidedly complex nature. Successful performance of the task implies not only that the subject is possessed of several very different mental powers but that he is able to direct their harmonious working together to achieve a desired end.

7. SUMMARY.—Briefly summarized the work thus far seems to have achieved the following results:

A picture-arrangement test has been devised which avoids the use of language by the subject, which rarely fails to attract and hold the attention; which is almost entirely independent of "school learning;" which can be given in from five to ten minutes; which is graded in difficulty; which admits of a scoring which gives credit for partial success; and whose method of administering and scoring eliminates almost wholly the personal equation of the examiner. The data at hand indicate that the ability to perform the test is almost entirely lacking at seven years or below, emerges rapidly from seven to ten, and beyond twelve is a very variable quantity. The adults in our study showed little or no improvement over twelve years. (It should be remembered that they were a small group of summer students.) It seems quite possible to the author that here is a test which, though of little value in establishing "mental age," at least beyond ten years, may prove to be of great significance to the clinician seeking to determine the possibilities of a subject for independent work in which he may have to meet new situations and be able to "put two and two together and get four." Much further experimentation with different types and classes of normal and subnormal subjects is necessary before a final conclusion can be reached as to the value of the test, but it seems to offer great promise.

At present, for all practical purposes, the best interpretation of results obtained from its use with any one subject can be made by referring his score to the proper age and sex group and noting where it falls within that group, whether at or near the median, twenty-five percentile, seventy-five percentile, etc. For example, suppose that a nine year old girl made a score of forty-two points. Referring to Figure II (Girls) we see that she has considerably surpassed the median score for her age. Or if a twelve-year-old boy makes a score of twenty-five points, by the same procedure it would be evident that he had made an exceedingly poor performance, falling about half-way between the seventy-five percentile and the minimum. Any score falling within the upper shaded portions represents an exceptionally good performance, any within the lower shaded portions an extremely poor one, while those located between the shaded portions represent fair, medium, or rather good performances.

Since the completion of the above study this picture arrangement test has been given along with the Yerkes-Bridges Point Scale and other mental tests to seventy girls at the Ohio Girls' Industrial Home. The correlation between the picture arrangement scores and other point scale scores of these girls, obtained by the Spearman "foot-rule" method, is 0.50 (P. E. 0.58).

THE FEEBLEMINDED IN THE STATE OF MISSOURI.¹

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We shall first consider the present situation in the state with respect to the state care, control, education and identification of the feeble-minded; and secondly, some of the needed remedial measures which we have recommended in connection with our work on the Children's Code Commission.

In 1911 it was estimated that there were 11,427 feeble-minded persons in the state of Missouri. The basis for this estimate was not revealed. On the basis of figures published in connection with a small psychological research in 1914 the number of feeble-minded children between the ages of 6 and 21 was estimated to be 38,260. This estimate exceeds by 2598 the estimate made by the British Royal Commission on the Feeble-minded of the number of feeble-minded children in all of England and Wales. After having spent about seven years in the almost daily clinical examination of mentally deviating children, we are of the opinion that the larger estimate of the number of feeble-minded in Missouri is very considerably exaggerated while the smaller estimate is also probably too large. In the interval between September, 1914, and November 24, 1916, we examined 1181 children from the St. Louis public schools (exclusive of 31 re-examined cases, and 45 other cases which do not properly belong to the series), the majority of whom were sent to the clinic as candidates for special schools for the feeble-minded. Of these children, however, only 28.1 per cent could be definitely classified as feeble-minded, while 46 per cent were classified as feeble-minded, potentially feeble-minded and borderline. Some of the later will eventually prove to be feeble-minded but the larger number will probably prove to be merely backward. In order to determine whether the children who were most seriously retarded were being sent to the clinic and in order to get at the children from the schools which had not referred any cases, we made a census of pedagogically retarded children last February and March. This census included all children of 9 years of age or less who were pedagogically retarded two years or over, and all children over 9 years of age who were pedagogically retarded three years or over. From the reports sent to the clinic by the principals we examined 67 pupils who had the most serious record of pedagogical retardation. The percentage of feeble-mindedness found

¹ Delivered before the Missouri Conference for Social Welfare, Columbia, November, 1916.

among these children was 31.3, which is only 3.2 per cent higher than the percentage found for the entire group. The percentage diagnosed as feeble-minded and borderline was 56, which is 10 per cent higher than the corresponding figure for the entire group. In the belief that a large number of feeble-minded children still remained in the schools, the principals of the schools were definitely and emphatically instructed in September, 1916, to submit the names of all the pupils in their schools whom they considered to be feeble-minded. Under this strong-arm method of rounding up the feeble-minded, we have thus far this fall examined 318 new cases. Owing to the hurried and hampered conditions under which these examinations have been made our data on these cases are not so satisfactory as those for the two preceding school years. However, we have been able to classify only 22.6 per cent of these children as definitely feeble-minded, while 33.3 per cent were diagnosed as potentially feeble-minded and borderline, giving a total of 55.9 per cent of feeble-minded and borderline cases. In other words, the percentage of feeble-minded found by the strong-arm method of routing them out was 5.5 per cent less than the per cent found in the entire group of 1181, while it was 6.9 per cent smaller than the number found in the school year 1914-1915, 8.2 per cent smaller than the number found in 1915-1916, and 8.7 per cent smaller than the per cent found among the cases examined from the census of retardates. On the other hand the percentage of feeble-minded and borderline cases was 9.9 per cent larger than the per cent so classified among all the cases, 15 per cent and 12.2 per cent larger, respectively, than the per cent so classified among the 1914-1915 and 1915-1916 cases, and .1 per cent less than the per cent so classified among the cases examined from the census of retardates. During a period of two years and three months in which we have been mentally examining children in the St. Louis public schools, we have identified 333 as feeble-minded and 544 as feeble-minded, potentially feeble-minded and borderline in an elementary school population of over 80,000. This is exactly 333 too many feeble-minded—so much human excess baggage—while there is plenty of humble and crude work in the world for the borderline to do. The point is, however, that on the basis of our studies in the St. Louis schools¹ we feel warranted in saying that we do not believe that the percentage of feeble-mindedness will exceed one-half of one per cent of the public elementary school population. This estimate is very much more moderate than the claim that from 2 per cent to 3 per cent of school children are feeble-minded.

¹ The details of these studies may be found in the Reports of the Board of Education of the city of St. Louis for 1914-1915, pp. 129-160 and 1915-1916, pp. 142-211; and in the Problems of Subnormality.

This huge difference in estimates is undoubtedly largely due to a difference in standards of judgment. The liberal estimates made during the last six years have almost invariably been based on certain arbitrarily assumed standards of mental retardation. But the ultimate test of all these standards is socio-industrial competency. We do not think that the concept of feeble-mindedness should be applied to anyone unless he is so deficient mentally from birth or from early life that he is unable to make a living or to get along without external support. This concept is in harmony with the definition of Tredgold, the most eminent authority on feeble-mindedness, and with the definition of the English Mental Deficiency Act adopted by Parliament in 1913, according to which the highest grades of the feeble-minded, often called morons in America, are "persons in whose case there exists from birth or from an early age mental defectiveness not amounting to imbecility, yet so pronounced that they require care, supervision, and control for their own protection or for the protection of others." In other words, only when the social or industrial incapacity is due to mental deficiency dating from birth or from early life and when it is so extreme that the person cannot get along without external support, should the person be classified as feeble-minded. We must remember that there are other causes of social inefficiency besides feeble-mindedness.

How many feeble-minded, then, are there in the state? Nobody knows. Personally we are not prepared to say that the number exceeds 6000. This is based upon an old estimate of one feeble-minded person to every 600 in the general population which we believe is more in harmony with the facts than some of the recent estimates. But this figure is almost staggering in view of the deplorably inadequate facilities afforded for the care and control of the feeble-minded in the state. The number of inmates in the institution for the feeble-minded at Marshall last September was only 588, and of these 162 were epileptics, most of the latter probably being mentally deficient. No more can be admitted because of lack of accommodations, although there are 800 names on the waiting list. The number of feeble-minded now confined permanently or temporarily in improper kinds of institutions, such as private or public hospitals for the insane, workhouses, industrial schools, reformatories, prisons, jails, and infirmaries, is probably very much larger, say 1500. This would leave 4000 feeble-minded at large in society. It is probable that not much over one-half of these are properly supported, safeguarded or controlled at home, leaving at large possibly 2000 dependent, or neglected, or unprotected, or delinquent feeble-minded persons who, for their own good and for the protection of the

state, should be permanently confined in institutions and colonies specifically organized for their proper training, care and control, and for the utilization of their labor possibilities.

There is no state in the Union of the same population and wealth as Missouri, with possibly one exception, which has provided such meagre institutional facilities for the care of the feeble-minded. This is shown by the following data which were secured through correspondence during the month of October this year.¹ Massachusetts housed at that time 2900 feeble-minded and epileptics in two institutions for the feeble-minded, one colony annex, and one epileptic colony. If Missouri provided the same accommodations as Massachusetts in proportion to population she would care for almost the same number. Massachusetts is doing almost 500 per cent better than this state. Iowa provided accommodations in one institution for 1185 feeble-minded and 299 mentally deficient epileptics, or a total of 1484, and has under construction a separate colony for epileptics which will be ready next summer. If Missouri did as well as Iowa in proportion to population she would now provide institutions for over 2200 feeble-minded and epileptic inmates. Iowa now does almost 400 per cent better than Missouri. Pennsylvania provided beds for 3984 inmates, of whom 3384 were feeble-minded and 600 epileptics, in three institutions for the feeble-minded, including one semi-public institution, and in one colony for the epileptic, while a separate village for feeble-minded women is now being constructed. If Missouri did as well as Pennsylvania in proportion to population she would care for about 1700 feeble-minded and epileptic. Pennsylvania does almost 300 per cent better than Missouri. The true figure, however, is somewhat less than this, as the semi-private institution contains inmates from outside of the state. New York had accommodations for 6000 feeble-minded and epileptic in five institutions for the feeble-minded and one institution for the epileptic. If Missouri did as well as New York in proportion to population she would now care for about 2100 feeble-minded and epileptic instead of less than 600. New York does 350 per cent better than Missouri. We do not wish to be understood as implying that we have the same ratio of feeble-minded and epileptics as the three eastern states mentioned above, but there can be no doubt that our institutional facilities are utterly inadequate.

The state of Missouri has likewise been equally remiss in establishing special classes in the public schools for the proper training of feeble-minded children. In this state it is entirely optional

¹ From Dr. George Mogridge, Iowa; Dr. J. M. Murdoch, Pennsylvania; Dr. Geo. M. Kline, Massachusetts; and Dr. Charles Bernstein, New York. We do not have data for this year from Ohio and Illinois, but both of these states do very much better than Missouri.

with the local boards of education to open special classes for the feeble-minded. In New Jersey school districts are required by law to open such classes when there are ten or more mental defectives in a given school district (but they would not all be feeble-minded, according to the standards which have been laid down). In Minnesota the establishment of special classes has been assured by the granting to local school districts of a state subvention, authorized in 1915, of \$100 for every child in attendance throughout the year in a special class. Under this regulation many cities of this state have already opened special classes. Only two cities in our entire state have established special classes for the feeble-minded, namely, St. Louis, where special classes were organized in 1908 and where the number of classes is ample, and Kansas City, where two classes were opened in the fall of 1915. In all the other public school systems of the state, if our information is correct, the feeble-minded children are trained in the regular classes for the normal children, where they impede the progress of the normal pupils and rob them of the time and attention which by right are theirs—unless indeed the teachers, driven to despair, neglect the feeble-minded, as is not infrequently the case—where they sometimes exercise a pernicious influence upon the morals of the normal pupils, and where they fail to obtain the type of training which fits their peculiar needs. In fact, most of the feeble-minded merely vegetate in the regular grades year after year. The economic waste suffered by the taxpayers of the state due to the education of feeble-minded and normal children in the same classes, amounts to many thousands of dollars every year. Moreover, there is a large number of children—far more numerous than the feeble-minded,—who are so pedagogically or mentally backward, although not feeble-minded, that they cannot keep up with the pace of the normal pupils. These pupils are a heavy drag on the regular classes where they rob the normal pupils of their birthright and where they vainly try to do work for which they are not adequately prepared or for which they have no aptitude. The work in the grammar grades, because of its abstract nature, is largely incomprehensible to these slow minds which function only in concrete terms. Many of these children, because they were denied appropriate training in school, later in life become an economic burden to the state and a moral menace to society. Children of this type of mind should be trained in ungraded classes (which should be distinct from the feeble-minded classes.) Borderline cases will necessarily gravitate to the ungraded classes and indeed should be tried out in these classes before being considered for the special schools for the feeble-minded. In the ungraded classes abundant opportunities should be afforded

for individual help and the instruction should be predominantly concrete, and, for the more backward types, industrial and motor. A beginning has been made to organize classes of this kind in the St. Louis schools, but merely a beginning. It is safe to say that where there is now one ungraded class in the public schools of the state there should be a hundred such classes, together with supplementary elementary industrial schools for vocational or prevocational training.

The third defect is the woefully inadequate provision afforded by the state for the proper educational and psychological examination and classification of feeble-minded, backward and other types of mentally variant children. There is not a single college, university, institution, or police board or criminal court in the state which supports a properly manned psychological or educational clinic. The St. Louis schools support a clinic, but the staff is not large enough to make it possible to examine all the children who should be examined or to do the work with the requisite thoroughness. Mental tests, largely the Binet tests, are being given in the Kansas City schools, in the Juvenile Courts of St. Louis and Kansas City, in one of the dispensaries connected with Barnes Hospital, and probably in other places. But none of these agencies supports a psychological or educational clinic, technically so-called, with a specialist on feeble-minded and backward children. The inadequate provision in the state for accurate psychological and educational diagnosis is a very serious handicap, because the differential diagnosis between feeble-mindedness and backwardness is by no means always easy, and the consequences of a blundering diagnosis may be very grave to the individual or to society. On the one hand, backward children may be mistakenly diagnosed as feeble-minded and then assigned to special classes for the feeble-minded or committed to institutions for the feeble-minded. We could give numerous instances where both of these things have happened. We need not dwell upon the manifest injustice of treating backward children as though they were feeble-minded. On the other hand, feeble-minded children are often diagnosed as backward, and thereupon given the educational and social treatment befitting backward or normal children, and the parents are assured that there is no cause for worry as the children will eventually "outgrow the trouble" when, as a matter of fact, there is no method known to modern science by which the defective can be brought to even approximate normality. It is well to emphasize that the diagnosis of mental defect and deficiency is often difficult and that a correct diagnosis is of vital practical consequence to the individual concerned.

The fourth defect is the inadequacy of the state statutes for the legal commitment and permanent detention of the unsupported, uncontrolled and delinquent feeble-minded in the state. There is no law by which an improperly supervised or restrained feeble-minded person can be committed for permanent detention to the state institution for the feeble-minded against the wishes of parents or guardians. The consequence is that the commitments are usually of persons whom the parents or guardians wish to have committed although these persons may be less in need of commitment, so far as the state's interests are concerned, than other feeble-minded persons who are not under adequate restraint. Furthermore, there is now nothing to prevent parents or guardians from removing a committed person when the fancy strikes them. When persons are returned to homes in which they are not properly protected or restrained they are liable to become a serious menace to the community, either because of their industrial incompetency or because they become willing cat's-paws or unsuspecting dupes of evil designers, or because they become aggressive offenders.

The defects pointed out above reflect accurately, we believe, the lack of popular interest in the state in the problems affecting our feeble-minded dependents. In order to remedy these defects in some measure we have recommended, through the Children's Code Commission,¹ among others, the following measures:

1. The enactment of a law providing for the mandatory commitment and permanent detention in institutions of all dependent, unsupported, or unprotected feeble-minded persons in the state.

2. The enactment of a law forbidding the commitment of any but feeble-minded persons to a feeble-minded institution and providing for the release of persons committed as feeble-minded who later prove on careful study not to be feeble-minded.

3. The enactment of a law providing that certification of feeble-mindedness shall be made only by psychologists or by physicians who are specialists on feeble-minded and backward children.

4. The establishment of a state bureau for mental defectives, to aid in the examination and classification of feeble-minded and backward children. The most modest proposal is to organize a small bureau in the extension division of the state university.

5. The enlargement of the state's institutional facilities so as to provide shelter and protection for 1500 or 1600 feeble-minded persons, in a central colony at Marshall, combining the features of an asylum, school, farm colony and workshop, in an auxiliary institution near St. Louis, designed especially as a school for educable feeble-minded

¹ The complete report is available in the published report of the Code Commission.

children, and in small permanent or temporary camps. It is further recommended that the epileptics be colonized in a separate institution.

6. The abolition of the present political method in favor of a merit or efficiency method of appointing the superintendent of the institution or institutions for the feeble-minded.

7. The permanent detention of feeble-minded prostitutes in detached cottages, either in the Industrial Home for Girls or in the central colony for the feeble-minded as well as the permanent detention of feeble-minded delinquents and criminals of any age and of either sex in detached cottages.

8. The enactment of a law providing for the mandatory establishment of special classes for the feeble-minded whenever ten feeble-minded children are found in any given public school district. Ungraded classes should also be established for slow and backward children. Eventually the establishment of these classes should also be made compulsory by law.

9. The appropriation of \$5000 by the state for the conduct of a census by qualified investigators, of the number of the feeble-minded at large in the state, and in the elementary schools, penal and eleemosynary institutions and county infirmaries, and the making of further recommendations with respect to the care and control of the feeble-minded in the state.

Let us say, in conclusion, that the question of the elimination or reduction of the feeble-minded by sterilization, or birth control, or regulation of marriage is worthy of consideration, but it is not believed that effective legislation could be secured at this time, or if secured that it would be enforced.

CLINIC REPORTS.

X.

Benjamin was returned to the clinic by his mother in March, 1917, over a year after his first examination. His age was eleven years and four months. The complaint, as before, was truancy, stealing, and backwardness in school. The mother reported that the boy ran away less, stole less and had settled down a little, especially since he had joined a boys' club at the Y. M. C. A. In three school terms he had advanced from 3A to 4A Grade. She was still, however, not satisfied with his progress or behavior, and since the diagnosis had been deferred at the earlier examination she returned to find out definitely, if possible, whether mental deficiency was a factor in this unsatisfactory state of affairs.

In the mental examination given, Benjamin showed no evidence of feeble-mindedness. He was quiet and attentive, with a somewhat listless, but wholly persistent attention. As he became more friendly, he showed a mild but pleasant responsiveness.

The time of his shortest trial with the Witmer formboard places him among the slowest of Dr. Young's eleven year old boys. Distribution of attention was not quite up to par; he made two wrong moves in both the first and third trials. A slight tremor of the hands showed some nervousness and this was increased by the direction to do it as fast as possible, so that his last trial was the poorest of the three.

Again, with the Witmer cylinders, he worked without much speed or energy but steadily, at first with one hand only. His method was good. At the beginning of the first trial, he tried to put blocks into recesses a little too large for them, but instantly recognized the error and soon ceased entirely to make this misjudgment. He never left a block in a wrong recess.

Benjamin seems weak in motor ability,—i. e. he is slow for his age and a bit lacking in ingenuity in handling this material, but the performance with the Healy Construction Tests indicates that he learns rapidly from experience. His visual images seem adequate but not strong, and his analytic attention to both images and percepts were somewhat weak, conditioning his inability to manipulate them readily. The occasional poor distribution of attention seemed associated with listlessness, for distributive concentration of attention was quite adequate in his energetic attack on the Healy Puzzle B, which interested him.

By the Binet-Simon Tests (Stanford Revision) his mental age was 10 years, I. Q. 88.2. Three twelve year tests, which it is very possible he might have passed, were omitted for lack of time. This might have brought him closer to full age. Benjamin is certainly not retarded more than a year (possibly less) on the scale of mental age. He not only passed the tests credited to him, but his reactions to them especially in the detection of absurdities, comprehension, vocabulary and definition tests were definitely normal. His greatest deficiency was in memory span for digits. He could repeat only 5 digits forward and 3 backwards. He failed on seven trials in the repetition of 6 digits, though a year ago it is reported that he had a span for 6 digits. This fluctuation of memory span may be characteristic of Benjamin. Early in the afternoon he failed in three out of four trials to repeat 3 digits backward, and at the end of the afternoon succeeded in three out of four trials. It may be associated with the patent lack of energy in his attention.

The diagnosis was backward but not mentally deficient.

SARAH WARFIELD PARKER, A.M.,
Graduate Student.

XI.

This case illustrates the varying mental ability and behavior to be found in a case of syphilitic degeneracy.

When first seen at the Psychological Clinic, Samuel was six years of age and was brought by his foster mother because of erratic behavior and apparent backwardness. He has been seen almost every year since that time for one of these reasons, and she recently brought him again because of a sudden cessation of efforts to progress in school, coupled with misbehavior in the schoolroom.

He is now thirteen years of age and has the average anatomical and physiological development for his age. His health is good.

This boy is the illegitimate son of a woman of good family, by her cousin. With his twin sister, who died of diphtheria at the age of five years, he was adopted into a good home when he was less than a day old. Since that time he has been given excellent care in good surroundings.

At the age of six he showed marked nervousness, was backward and behaved badly, correction and discipline seeming to have little effect upon him. He entered school but lost most of two years because of nervousness. He was then placed in a special class, where he has remained up to the beginning of the present school year. Several years ago, anti-syphilitic treatment was begun and following this he showed physical and mental improvement. The quality of his school work improved, and in two years he did three years of school work. It was then considered advisable to place him in a regular fourth grade, and though he had previously indicated a desire to get out of what he called the "dumb class," when placed in the regular grade this year, he resented it. Since that time he has refused to do his school work, has been disobedient in school and has been the cause of much disturbance in the room.

The mental examinations of Samuel have shown continuous progress in mental development, but he is retarded to the extent of almost two years. In tests which he has performed upon several occasions, he makes a particularly good showing as he remembers and improves upon what he did before. The attention and interest he shows are normal but he seems to fatigue rather quickly. In school work, he shows by test that he can do the work of the grade he is now in.

The *status presens* is not that of feeble-mindedness, so far as we are willing to say, but we agree now with the previous diagnoses, that he may yet prove to be feeble-minded. The diagnosis is syphilitic degeneracy, to which are attributable the mental inequalities and the variability of behavior.

There is a place for him in a small town, and as he has shown a preference for country life, it is advisable that he be placed there.

F. C. PASCHAL, A.M.

Harrison Fellow in Psychology.

XII.

Josiah was brought to the Clinic by his mother and a visiting nurse because of incorrigibility and refusal to go to school. He was a large boy of 7 years and 8 months. He had brown hair and brown eyes and would have presented a rather pleasing appearance had he not been dirty and ragged. He was very timid and feared to be away from his mother for a moment, crying loudly at intervals without any apparent reason while being examined.

The case is of particular interest for several reasons. It would seem that Josiah has sufficient ability to be trained to remunerative employment. In general behavior he would seem to be about two years retarded and to be about

five years old. Intellectually he may turn out to be as low as a low grade imbecile. He appears to have a specific defect of memory and analytic attention. In school he is in the first grade and he scores 6 years and 10 months by the Binet tests. The mechanical tests do not show any great mental deficiency. It would seem to be a case where objective interpretation of tests would give the boy an index of normality, while the analytic interpretation of his performances shows him to be seriously deficient. The bad history of the family adds interest to the case.

The physical measurements showed about two years acceleration. He has always been generally healthy. He was very dirty and had a bad cold.

According to the visiting nurse the family is known to every charitable organization in town. His father drinks heavily and is thought to be feeble-minded. He is so illiterate that he cannot drive a coal wagon, as he cannot read the names of the streets and does not know the Philadelphia streets although he has lived here all his life. The whole family is under probation. When the probation officer calls, Josiah runs away swearing at her.

In the mental examination Josiah did rather poorly in all the mechanical tests. He was successful with the formboard, but did not succeed with the cylinders, in the three trials. His memory span was five digits. In school work he was very deficient, but he has been irregular in attendance, not being present more than a few days in the last term. The test that was really significant in his case was the teaching test. With wooden letters it did not seem possible to teach him the names of more than two letters at once. When he was given more than this number he remembered none that had gone before. It was the same with the design blocks. Up to a certain complexity he was capable of succeeding but beyond this he could not be taught to go.

Such a case, Dr. Witmer suggests, raises the question as to what really constitutes the norm of human mentality. It would seem possible that Josiah could grow to manhood and raise a family at least as well as his father has done.

The diagnosis in this case was middle grade imbecile (Barr Classification). The recommendation was that Josiah be forced to attend school in the first grade and be made to learn his letters. It was also recommended that he be given clinical teaching and that there an attempt should be made to overcome his infantile stammer.

DONALD M. MARVIN, A.M.,
Graduate Student.

REVIEWS AND CRITICISM.

Health and Disease, Their Determining Factors. By Roger I. Lee, M.D. Boston: Little, Brown, and Co., 1917. Pp. xvi 378.

Dr. Lee, who is professor of hygiene in Harvard University and visiting physician to the Massachusetts General Hospital, dedicates his book "to the anonymous graduate of Harvard whose wisdom and generosity made possible the department of hygiene in his *alma mater*." It is a noble tribute to the munificence of one and the intelligence of the many. "The book contains," says Dr. Lee, "the principles which should guide an individual in living an effective life to its allotted span; the principles which should govern a community in facing its many problems of health and which a citizen should know to act intelligently and wisely towards this vital function of government, and something of medical history and progress, as well as of the fields still to be explored. This material has been based on the assumption that the intelligent layman, who, after all, is keenly interested in health and disease in his own person and in his family, and who pays not only the doctor's bills for himself and family, but also his share of the community's medical bills in taxes, is entitled to a straightforward exposition of the underlying principles of health and disease."

The range of subjects covered is exhaustive. The treatment is judicial, especially in discussing such moot questions as alcohol, tobacco, diet, and venereal disease. Dr. Lee disarms the only serious criticism to which his book is exposed, by admitting frankly, "There has been opportunity for the inclusion of no extended amount of original material. First hand sources of all sorts, medical books, monographs, and periodicals, have been consulted freely."

The work will be of the greatest value to social workers and public health officers, to physicians as a compendious reference on preventive medicine, and in general to all employers who are far-sighted enough to see their own profit in the welfare of their employees.

A. T.

NEWS AND COMMENT.

Advance in the Study of Mental Hygiene.

The Ninth Annual Meeting of The National Committee for Mental Hygiene, Inc., was held February 7th in New York City.

Mr. Otto T. Bannard, Treasurer, announced that gifts amounting to more than \$30,000 for general expenses had been contributed during the past year by four donors, one of whom had pledged \$100,000 toward an endowment fund that is being raised. The Rockefeller Foundation contributed \$34,000 for special purposes, such as surveys of conditions among the insane and feeble-minded.

Short addresses were given by Dr. Walter E. Fernald on "Supervision of the Feeble-minded in the Community"; Dr. William A. White, "Influence of Mental Hygiene upon Methods of Dealing with Crime and Criminals"; Dr. William L. Russell, "Some of the Indirect Results Which May Be Expected to Follow our Surveys of the Care and Treatment of Mental Diseases"; Professor William H. Burnham, "The Role of Mental Hygiene in Education"; Dr. E. E.

Southard, "The Community as a Unit for Mental Hygiene Work"; Dr. Henry R. Stedman, "The Teaching of Mental Hygiene in Medical Schools."

During the past year surveys have been completed in the states of California, Colorado, Connecticut, Georgia, Louisiana, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and are now in progress in the cities of Chicago and New York. State societies for mental hygiene are now organized in sixteen states.

During the coming year emphasis will be laid upon the educational work of the committee. A feature of this work will be the publication of a quarterly journal, "Mental Hygiene," the first number of which was issued during January. It is a substantial magazine of 156 pages, containing articles on "Unemployment and Personality," by Prof. Herman M. Adler; "Provision for the Feeble-minded in the United States," by Dr. Walter E. Fernald, with a table showing the existing institutions state by state; and "Mental Adaptation," by Dr. Frederick Lyman Wells, as well as six other papers of uncommon merit. The Journal is published at 50 Union Square, New York City.

With Regard to Psycho-Motor Norms.

TO THE EDITOR OF THE PSYCHOLOGICAL CLINIC:

On the basis of a diagram of the formboard in which the dimensions of the blocks had not been drawn in entirely correct proportions by the makers, A. T., in reviewing our *Psycho-Motor Norms* in the *PSYCHOLOGICAL CLINIC*, February, 1917, p. 270, draws certain erroneous inferences which require correction, in order that no one consulting the monograph may have any doubt as to the formboard used.

The formboard reproduced on page 1 of the monograph was printed from a cut which we assumed had been properly drawn because it was secured from C. H. Stoelting Co., who had used it to illustrate their formboard No. 78002 on page 1 of a circular entitled "Tests Used in the Training School at Vineland, New Jersey, by Dr. Henry H. Goddard." In this formboard which we used the square does not go into the circle, rectangle or hexagon, and the diamond will not go into the hexagon. In the preliminary exposition of our results we referred to the test as "the modified Seguinian formboard," and specified that it was "Number 78002 in Stoelting's catalogue,"¹ while in the reference given on p. 11 of the "Psycho-Motor Norms" which we made to our earlier use of the formboard (Experimental Studies of Mental Defectives) we stated that the "Vineland pattern" was used. On the strength of a statement made by Goddard we named the board after Seguin, in recognition of his early work on formboards—we had, moreover, previously seen a formboard in an institution which was said to have been devised by Seguin and which we inferred was the original model of the board we used—and also made due acknowledgments to Norsworthy and Goddard: "The Formboard is one of the many good things we have inherited from Seguin. . . . Norsworthy . . . embodied it among her tests. . . . Our present board is a slight modification of the one used by her."² Since this statement was made in 1912 while Norsworthy wrote six years earlier our statement evidently could only have referred to Goddard's adaptation of the board. Norsworthy does not tell us anything about the derivation of her board.³

Sylvester employed a formboard in which he used "Goddard's arrangement and size of forms, but reversed their order, made the recesses shallower, used

¹ Age Norms of Psycho-Motor Capacity. *Journal of Educational Psychology*, 1916, p. 19.

² The Formboard as a Measure of Intellectual Development in Children, *The Training School*, June, 1912.

³ The Psychology of Mentally Deficient Children, 1906, pp. 25 and 26.

hard wood, contrasted the colors of board, blocks and recesses and gave the whole a more attractive appearance.¹ The essential difference between this board and the one we used is simply the reversal of the order of the blocks: the forms are absolutely the same.

Sylvester's experimental data did not show in what respect or to what an extent the arrangement which he used represented an "improved type of board," nor do they show that the results secured from this board are so different that they cannot be compared with the results obtained by the older arrangement. On the contrary, Sylvester found that even blocks of different sizes (but the same shapes) gave "practically the same" results (p. 6), while he considered that the study of the "re-arranging the forms" "would probably contribute little to the efficacy of the device" (p. 7). "Without a long and elaborate series of experiments (probably not worth while), one could not improve on the size, arrangement and choice of forms as they appear on the standard formboard" (p. 12). Both Goddard and Sylvester regard this as the "standard formboard," and in this judgment we concur, after having used the board with many thousands of cases.

J. E. W. WALLIN.

Summer Courses in Psychology at University of Pennsylvania.

The illustrated announcement of Courses in Psychology at the Summer Session of the University of Pennsylvania is now ready and may be had for the asking. Address a postal card to Professor Edwin B. Twitmyer, College Hall, University of Pennsylvania, Philadelphia, Pa.

¹ The Formboard Test, 1913, p. 3.

The Psychological Clinic

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VOL. XI, No. 3

MAY 15, 1917

DIAGNOSTIC EDUCATION—AN EDUCATION FOR THE FORTUNATE FEW.¹

BY LIGHTNER WITMER, PH.D.,
University of Pennsylvania.

In 1744 Pereira presented to the Academy of Science at Rochelle, France, a boy born deaf whom he had taught to talk. By the results of an educational experiment, Pereira demonstrated the analytic separateness of two of the important elements involved in language. The child comes into the world endowed at birth with a reflexly functioning cerebral center,—the speech center, an instinct for language. The human being begins to talk as he begins to breathe. The words which he hears initiate the cerebral excitations which produce the coordinations of muscular contractions necessary to bring about the child's first approximations to correct articulation. The coordinated movements of the speech mechanism excite in their turn motor or kinesthetic sensations which leave in the brain, and ultimately at the disposal of the child's volition, kinesthetic and verbal memory images. If the speech mechanism of a deaf child can be stimulated in some other way than through the reflex cerebration initiated in the hearing child by verbal perceptions, the deaf child, like his hearing brother, will acquire the memory images of spoken words and when these are controlled by his attention and imagination he will show a similar voluntary control over language. There is, in my opinion, no more significant single event in the history of education than Pereira's demonstration before the Academy of Science at Rochelle of the power of articulate language acquired by a deaf boy through scientific training. It stimulated directly the education of the deaf, the blind and the feeble-minded, and has culminated in the training of Helen Keller. Adapted by Montessori to normal children, it enabled her to make children under five years of age almost teach themselves to read and write. Seguin emphasized the physiological

¹ An address delivered before the American Philosophical Society, Philadelphia, Pa., on April 12, 1917.

feature of this educational method. Montessori has preferred to emphasize the appeal to the free activities of the child. In my work, which I consider a modern phase of Pereira's and Seguin's work, I lay special stress upon the necessity of the analytical diagnosis—a continuing diagnosis, to be made not only at the time of the first examination of a child, but through a more or less prolonged period of educational treatment, so that every step is determined or prescribed as the result of known factors measured, so far as may be, and assigned relative values in the course of the educational treatment to be prescribed. For this method I can for the present find no better term than “diagnostic education.”

Diagnostic education is to be found in the home, intimately combined with instinctive and traditional elements. Sometimes the parent punishes his child because he is annoyed, irritated, or angered at the child's behavior. This is orthogenic treatment; that is to say, it tends to produce normal and favorable reactions in the child. Even the lower animals understand and react favorably to a powerful display of emotion. A parent will also act upon traditional principles and theories. For example, he may believe in corporal punishment or he may disbelieve in corporal punishment. He may ascribe unique value to discipline and minimize freedom, or he may exalt freedom to the level of a fetish, and taboo discipline. Even the thoughtful parent does little more than select from the common stock of human knowledge those rules of guidance which happen to be most congenial to him. Few parents are absolutely devoid of observation and reflection however. They do not apply the same principle to all children, nor to the same child under all circumstances. Whenever a parent determines, as a result of observation and reflection, to punish one child for a particular offense and not to punish another, or to mete out different kinds of punishment adapted to the individual needs of different children, he has recognized a difference in the constituent elements of the children. He has made a differential diagnosis and has prescribed what appeals to his judgment as the orthogenic treatment.

In school, all children are taught according to their age and level of development what society in the main holds to be good for them. There is a maximum of general principles and uniform methods based upon our understanding of an average, but often very hypothetical, child. The subjects of the curriculum are selected with reference to their universal value and are applied to all children alike. At the best, there is some recognition of the existence of groups of children having diverse characteristics and requiring a diverse educational treatment. In the elementary schools, in

high school, and in college, there is a minimum of differential diagnosis and of orthogenic treatment prescribed to meet the needs of the individual pupil. Such treatment is often held up to us as an ideal. It is proclaimed by some schools as a real existent, but as a matter of fact, for reasons which will appear in the course of this paper, it can never become a dominant element in a school system.

Even in well-ordered homes where thoughtful parents are employing diagnostic education, the diagnosis is not expert diagnosis. In consequence, thoughtful parents are able to achieve satisfactory results only with children who approximate the average or hypothetically standard child in mental and physical constitution. Both the parent and the school fail in the orthogenic treatment of an exceptional child. For these children an expert diagnosis is required before a satisfactory educational treatment may be prescribed. Among such exceptional children, I include not only those we call feeble-minded, but also those who are exceptionally gifted. With both classes of children our aim should be the maximum development possible for each child, which in the case of the gifted child necessarily means something higher than an average level of attainment and proficiency.

For some years I have devoted myself to the analytic diagnosis and educational treatment of children who resist educational treatment by ordinary methods. The task which I set myself and my assistants is to obtain the maximum amount of development in a minimum amount of time with a given expenditure of effort. The measured progress of the child is therefore the object, and at the same time, the test, of the correctness of my diagnosis and of the resultant efficiency of the prescribed treatment. Some of these children are not feeble-minded. They possess one or more mental defects which, however, do not distinguish them from normal children, for I define as a mental defect any mental attribute which interferes with a child's proficiency or progress.

Nevertheless, many children, even some concerning whom I have been doubtful at the first examination, must be diagnosed as feeble-minded. In these children the retardation is of such degree or character that we cannot conceive of the possibility of the child's attaining to the normal standard of social proficiency. By this, I mean that he cannot be expected to support himself, be permitted justly to have children, or even to maintain an existence at large without constant disciplinary guardianship. The diagnosis of feeble-mindedness would appear, therefore, to involve the prognosis of permanent deficiency. Moreover, in my experience, the feeble-minded child usually manifests peculiarities of body, general behavior, and

of mind which often enable us to distinguish him easily from the child who is retarded but not feeble-minded. The general diagnosis of feeble-mindedness is a social classification based upon the observation of a child's behavior. We do not observe that the child has a feeble mind, and therefore *is* and *must* remain socially incompetent. We observe the incompetence and deficiency of the child's present behavior. If the child's performances do not conform in character and amount to what we know to be standard for his age of development, we assert the existence of a mental status which we cannot observe. A child of three years who cannot be trained to habits of personal cleanliness may be safely diagnosed as feeble-minded, provided his life history is not one of continuous and serious illness. A child of six who has normal hearing and who does not talk, especially if his history shows that he has been slow in learning to walk, will invariably justify on further examination a diagnosis of feeble-mindedness, provided there is no specific defect of the organs of speech. A child of eight who has not been able to learn, although taught, the colors red, yellow, green and blue, or who cannot under standardized conditions pass the formboard test, which involves the discrimination and matching of eleven different forms, will invariably prove incapable of learning to read and write. A child of twelve whose memory span is shown to be not more than three will not be able to attain to the intellectual level of a normal adult.

The general diagnosis of feeble-mindedness, then, is a sociological classification based upon actual and latent proficiency of behavior, interpreted in psychological terms. In doubtful cases a careful analytic interpretation of a child's performances must be made. Our so-called mental tests are simply agencies by which we stimulate the child to perform under our observation. The analytic interpretation, that is to say, the analytic diagnosis will be expressed in such terms as fear, shyness, anger, pride, jealousy, rage, sensation, imagination, memory, attention, understanding, intellect and intelligence. It is well to remind those who are not psychologists, and even some who are, that these terms are abstract terms derived from the observation of human and other animal behavior. The phrenologist attempts to read mental character from bumps on the head. The psychologist discovers all of the character with which he credits an individual in that individual's behavior. Psychological tests simply provide material which is meaningless until adequately interpreted. For this reason, the Binet tests, expressed in terms of so-called mental age, furnish very unreliable data in doubtful cases, especially in the hands of amateurs who lack experience and psychological insight.

This experience can be gained only from actual work with children. The general diagnosis or an analytical diagnosis must be tested by subsequent observations. In many cases they can only be adequately tested if the child is subjected to a thorough-going course of training. If I had not personally supervised the gruelling training of a boy of twelve years whom I diagnosed as having congenital aphasia but who was otherwise normal, I should speak with great hesitation of the existence of this condition in a child. Congenital aphasia, congenital illiteracy, congenital amusia or tone-deafness, and what I would call congenital anarithmia, are defects of memory which appear in the course of the education of the child and present unusual difficulties in training the memory in these respective directions.

Seguin set himself the task of making feeble-minded children normal. Wherever the line, *i. e.* the social criterion, may be drawn, separating the feeble-minded from the normal, there must be some children just below this line, who might, by appropriate training, be lifted into the class of normal. In practice, however, experts are very slow to diagnose a child as feeble-minded. Consequently, I am often compelled to give a diagnosis of feeble-mindedness where others have diagnosed the child, in many cases to save the parents' feelings, as merely backward. On the other hand, in only one case do I know the diagnosis of feeble-mindedness to have been positively given by competent authority where the results of training indicated either that the diagnosis was mistaken or the feeble-mindedness had been cured. This is a boy who, fourteen months ago at the age of two years and seven months was diagnosed as feeble-minded by an expert authority on children's diseases as well as by myself.

This boy was born of apparently normal and healthy parents, who have three older children said to be normal. It is asserted that his birth was normal and there was nothing to attract attention about his development until he was six months old. Then he had whooping cough; not a very bad case, but after this attack he showed anomalies of development. If placed on the floor he stayed just where he was put. If he fell forward he lay face down on the floor until picked up. If attractive objects were not within his reach he made no effort to get them. He spent most of his time lying in bed, unresponsive and indifferent. He did not begin to creep until he was two years and two months old, and then only after his knees were worked forward one at a time. He did not stand alone until he was two years and two months old and began for the first time to step out at two years and three months. A month later he was

able to walk about the room, but when I saw him first at the age of two years and seven months his walking was timid and wobbly. He could not even creep up or down stairs. He sat or lay in bed. If a card or a block were given him, he would hold it by the hour looking intently at it while scratching the side away from him with his nails. When lying in bed, he rolled his head so constantly to and fro that the hair on the back of his head was rubbed off. He dug his fingers into his ears and into his mouth, especially when irritated, so that for three months after I undertook his training it was impossible to get the constant sores cleared up. If the effort was made to take him from the bed he went into a paroxysm of apparently violent passion; at all events there was the most vociferous howling and tearing at his ears and mouth. At the same time his face became a purplish red, the whites of his eyes were violently inflamed, the gums bled and for a time I felt that in trying to subdue these spells I ran the risk of causing a cerebral hemorrhage. He said only a few words "kitty, daddy." When asked what the crow says, he could say "caw, caw." His comprehension of language seemed to be confined to pointing when asked to his mouth, eyes, nose and ears. In playing with blocks he would pile one feebly on top of the other. He made no effort to imitate any copy that was set him. If asked to put a block on the floor, he gave no indication of understanding the word block or floor. He did not seem to look at things. Objects like a lighted match seemed to appear suddenly in his field of vision, giving him a distinct shock. He was fond of holding a book in his hand and turning the pages. He could hold a watch to his ear and say "tick-tock." He could not feed himself and did not seem to know enough to close his mouth on a spoon. When the food was put in his mouth he would shut his lips and chew it quietly, but would take another spoonful without swallowing the first. He did not bring up again food which he swallowed—a good sign. Digestion was good; bowels fairly regular and normal. He was still in diapers. There were no physical anomalies excepting an apparently large head which suggested hydrocephalus. This had been the diagnosis of at least two physicians, but others, including the children's specialist, affirmed that he was not hydrocephalic. One physician suggested polio-encephalitis but for the most part no etiology was ventured. The boy's appearance and behavior would, in my opinion, have brought a diagnosis of feeble-mindedness from any medical or psychological expert. My examination confirmed this diagnosis so completely that I at first declined to undertake the boy's educational treatment, and only accepted him on trial at the very earnest solicitation of the parents.

I can give you only a glimpse of this boy's training, what and how I have taught him and more important perhaps, what he has taught me. I consider all training to fall under two heads, disciplinary and intellectual. By disciplinary training, I mean the training of a child's general behavior to conform to what we approve. It involves self-disciplined freedom of conduct, as well as obedience; the discipline of analytic and persistent concentration of attention, as well as the formation of regular habits of eating and sleeping. This boy has been under training fourteen months. During all that time the training has had disciplinary value and for about ten months only was it devoted to specifically intellectual training. This began March the 19th, in the second month, when I put before him the formboard consisting of eleven blocks of different shape, each of which had its corresponding receptacle. He would not make the slightest effort even to pick up a block to put it back in place. I then tried him with the peg board, a board of 36 holes, into which a corresponding number of pegs of the same size and shape can be placed. He could not imitate my action of putting a peg in its hole. He would not put a peg in the hole even when I placed the peg in his hand. I had to hold his hand, guide it to the hole and place it in position, but after having done this once, he put five or six pegs in successively. In all he put in 15 before I stopped, although after the first six he put in each successive peg only when I said emphatically, "Put in another peg." I never knew him to fill the board with 36 pegs as the result of a general command. His attention appeared to wander and he always desisted. In this, his behavior was exactly like that of a chimpanzee whom I taught, though not with the same ease, to put pegs into a board. Subsequent events proved that the reason he objected to putting 36 pegs into the board was because this action bored him and not because he lacked persistent powers of attention. I tried him again with the formboard, giving him a circle which he could not place in position. I then took his hand and put the circle into its proper place. I gave him the circle again. He put it back in place. I then gave him another inset and moved his hand to the proper place. He put this in position. I then gave him a third inset of different form, directed him to the right place and he put this in position. I then gave him two at a time and later three at a time. He was able in the first lesson to pick up one of the three blocks and put it back in its proper position. I was not able to accomplish this much with the chimpanzee after many months of instruction. His coordination was good. Two days later he could replace four insets without a single error, and on the seventh day, six insets.

In two weeks' time, without any urging, he was putting away the entire eleven insets in 85 seconds. Good distribution of attention was shown by the fact that while trying to force one block into the wrong place he reached out and picked up another block and placed it in its correct position. From this two weeks' experience I judged him to have a trainable and retentive memory, to have good images, good powers of sensation, good distribution of attention, excellent analytic attention and an interest in a relatively difficult problem, but no interest in such a simple problem as the peg board. The chief factor requiring training appeared to be his persistent concentration of attention.

The formboard mastered, interest began to wane and so I gave him my cylinder test, which offers eighteen cylinders varying in height and diameter. Adults attempting to work this test for the first time will take about one minute and will make many false moves. In seventeen days he was able to put back all the cylinders in three minutes with no final errors, and in three weeks he could do it in two minutes. He then lost all interest in the cylinders and so on April the 17th I found it necessary to provide something new for his further intellectual development. Meantime, following his work with the formboard, he had been practiced on the Montessori geometric insets, the series of six trays of very complicated forms. This work I considered in the nature of drill, training his powers of attention both analytic and persistent.

On April 17th I taught him the letter B, using for the purpose the large wooden block letter, saying, "This is B. Put B on the chair." In the afternoon he had forgotten it. After three separate periods of instruction he could pick out A, B, and C. He was asked to name them at the same time but would name only B. Some things you can force a child to do, but some things you cannot. I could compel him to pick out these letters, but I could not compel him to name them, so I had to tempt him with new letters and new words. I got him to say "V" on one trial by dragging out the V sound. He loved the sound of the letter and the feel of making it, but it took nearly two weeks to get him to say F. Someone worked an hour before he could be made to say the word *shoe*. The shoe was thrown up in the air and caught and while being thrown the word *shoe* was said. Apparently he said the word *shoe* because he thought it was part of the process of throwing it into the air.

On May 9th, or in about three weeks time, he had learned to pick out all twenty-six letters. He now needed some drill on these letters because he was still apt to confuse M, N and W. As part of this drill work he was taught to name the letters as they appeared printed in a child's alphabet book. During the month of June, his so-called

lessons were discontinued. They commenced again the first week in July. This time I began testing his ability to learn combinations of letters. He was given the three letters of the word *cat* and told to arrange them in the proper order, that is to say, to spell the word *cat*. The interruption of a month made it somewhat difficult to bring him down to this work. He was very much interested now in observing and naming objects. Asked to spell a word, he would hear a motor going by and say, "It's a motor car," or look at his shoes and say, "It's a shoes." On July 20th I found it necessary to prescribe a new exercise for further training his persistent and analytic attention. Holding up one or more fingers I said "One finger, two fingers, three fingers, four fingers." It took the month of July to teach him to arrange the letters of the words *cat*, *boy* and *pig*, when these were presented to him. During August he learned to spell *cat* and *boy* when the six letters of these two words were given him. He spelled *cat* or *bat*, whichever was asked, when the four letters B, C, A, and T were given. When a child is being taught, I always insist that he shall be taught at attention, on his toes as it were. Work is work and play is play. I even find that the same person cannot both teach and play with a child. Regularity of work is also an essential. The interruption of a few days usually means a great waste of time before the child's attention can be regained and held. In the early part of September he showed a great gain, when after an interruption of four or five days he buckled down to work again without waste of effort.

Beginning September 8th, words were printed on pieces of paper and passed to him to read. He began to read words by first spelling them. On September the 11th the words "I see a cat," were put before him and he was asked to read the sentence. *Dog*, *pig*, etc., were on September 14th substituted for the word *cat*. By September 19th he could read the sentences, "A man can see me." "A boy can see a dog." On September 21st I tested his newly acquired ability by putting Monroe's primer in his hand for the first time. He read,— "I can see a man. A man ran. A cat can see a rat." It was done haltingly, but it showed that from this time on the acquisition of reading was to be only a matter of drill. He can now both spell and sound words and will probably be graduated into the first reader by the first of next June.

I do not care whether this boy can read or not. I have had him taught reading because it was the best way to engage his interest, and train his attention, imagination, and memory. He liked it, so far as anyone can be said to like work. Intellectual work I call this, and intellectual work I say without hesitation, is an advantageous mental and hygienic stimulus to any boy of three years of age.

The intellectual capabilities of many children ranging from three to six years of age are allowed to lose their edge through not being adequately developed and trained. Whether this boy was feeble-minded or merely backward, the fact remains that he began to read at the age of three years after less than three months teaching with not more than twenty minutes instruction a day—a worthy accomplishment for even a normal boy. I contend that this was done by no unusual device or educational method. It was accomplished because it was based upon expert analytic diagnosis followed by a prescribed course of treatment, which involved the preparation of a fitting environment and the choice of painstaking and intelligent nurses and teachers without whose aid my psychological analysis would have been made in vain.

This boy has had a nurse and a teacher assigned to him individually and he has benefited from time to time by the intelligent coöperation of a corps of four or five teachers. I call this an education for the fortunate few because its effective employment requires individual training as well as individual diagnosis. Individual training means individual training, one teacher devoting herself to one child. Its expense would seem to preclude its general adoption in schools. Diagnostic education applied to any child, normal or feeble-minded, will aim to develop proficiency and intellectual ability. The cerebral mechanisms of each child must be coöordinated and controlled through the acquisition of intelligence and the development of the will. This is an important part of every child's education. Nevertheless, the higher aim of diagnostic education should be the training of intelligence, by which I understand the child's creative imagination, his power to think and act for himself, his ability to solve what for him are new problems. As higher intellectual levels are reached, creative imagination should be kept alive and stimulated to more difficult tasks. While intelligence is the most distinctive and valuable attribute of civilized man, it is the congenital gift of only a few, or else mass education permits it to fall into disuse in all but a few. The boy whom I am using today for purposes of illustration is not, in my opinion, a genius. At the best he is a normal boy who was seriously handicapped at the age of two years and seven months. Discipline and selective intellectual training were essential to accomplish the results which I have recited; but before all else my diagnosis indicated, and the prescribed treatment encouraged, the exercise of his intelligence in the directions in which he naturally found delight. What might not a similar educational treatment based upon an analytic diagnosis accomplish for one who is unusually gifted? What I plead for, I presume, is "*the education of a prince of intelligence.*"

THE INDIVIDUAL TESTS IN THE BINET-SIMON SCALE.

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I.

While studying the application of the Binet-Simon scale to epileptic children in 1910 and 1911, we found an "amazing lack of uniformity between the difficulty of the tests of the same age-norms for fully half of the ages of the scale;" we found that "scores of our low and medium grade epileptics passed one or more tests in five, six, or even seven higher age-levels, and scores won from ten to twenty (or even more) points in advance of the first or lowest age in the scale which they were able to pass completely;" we found that the B.-S. age given to the child might differ by as much as two or three years according as the rating was figured from the lower or upper base (in 39 per cent of the children the difference amounted to one year or more); we found that the "*collective difficulty of the different age-standards*" varied all the way from .00 per cent of passing to 84 per cent of passing;¹ and we were forced to the conclusion that the epileptics did "not qualify for a given age on the basis of satisfying the requirements of that age, but on the basis of the system of advance credits from higher ages." The question thereupon arose whether these anomalous results were due to the unequal difficulty or inherent defects of the individual tests in the different B.-S. ages, or to the wide range method of testing which we employed, or to "fundamental deviations or abnormalities in the epileptic mind." From an analysis of the data available then it appeared that the irregularities were not "primarily caused by the method of advance scoring from wide range testing,"² but were due to defects in the scale itself and peculiarities in the "mental make-up of the epileptic." Some of the errors which we found in the placement of the tests were confirmed, while others were not confirmed, by the findings of two or three investigators who at that time had tested groups of unselected school children.

Since our previous study was made we have had the opportunity of clinically examining a large number of non-epileptic school children of various grades of intelligence. In order that we might obtain Binet-Simon records which would be comparable with our records from the epileptic group previously studied we have continued to use the 1908 Binet scale and have given the tests as they were admin-

¹ "Experimental Studies of Mental Defectives," 1912, pp. 22, 26, 41, 43.

² Pp. 52f.

istered to the epileptics.¹ Owing to the exigencies of dispensary work we have not always, however, found it possible to use the wide-range method of testing as thoroughly as we did with the epileptics. The time at our disposal has sometimes been too limited. During the last few years we have also given the new 1911 tests (Vineland version), so as to make it possible to rate the cases according to both the 1908 and 1911 scales. In this series of articles, which will appear from time to time,² we shall confine ourselves to an analysis of the data for the individual Binet-Simon tests which have been secured from 1000 cases (703 boys and 297 girls), clinically examined in Pittsburgh and St. Louis from the spring of 1912 to January, 1916. These cases are consecutive except that no records are included from subjects who could not be given the B.-S. tests, nor are the records of reexaminations included from subjects examined more than once. Only 16 of the subjects included were over sixteen years of age chronologically, 7 of these being seventeen years old, 1 eighteen, 3 nineteen, 2 twenty-one, 1 twenty-five, 1 twenty-seven, and 1 thirty-five. The intelligence classification of the subjects was as follows:

	Boys		Girls		Both	
	No.	% ³	No.	% ⁴	No.	% ⁵
Accelerated.....	8	1.1	14	4.7	22	2.2
Normal.....	52	7.3	21	7.0	73	7.3
Retarded.....	87	12.3	22	7.4	109	10.9
Backward.....	280	39.8	94	31.6	374	37.4
Borderline.....	85	12.0	26	8.7	111	11.1
Deferred.....	17	2.4	16	5.4	33	3.3
Morons.....	94	13.3	58	19.5	152	15.2
Imbeciles.....	73	10.3	44	14.8	117	11.7
Idiots.....	7	.9	2	.7	9	.9
Feeble-minded.....	174	24.7	104	21.5	278	27.8

¹ See "Experimental Studies of Mental Defectives," p. 110f. In giving test No. 10 we have never asked "What is it about?" This question was inadvertently introduced into the Guide. We did not have all the sentences in tests 8, 21 and 58 standardised at the time some of the epileptics were tested. For test 23 nine-year credit has always been given for mere descriptions, while the rating has not been based on the replies to the supplementary question given in the Guide, when a classificatory definition was not spontaneously proffered. In test 43, we have used 25-6c. In 46, the weight test, we have always used metal pill boxes of 6, 9, 12, 15 and 18 grams, similar to those used at Vineland. We have, however, never suggested to the child to revise his arrangement, as suggested in the text, except when it has been apparent that an impulsive child has gone through the operation in a wholly perfunctory manner. These instances of suggested revision have been very few. We have never arranged "the weights while the subject looks on," as stated by Terman. After the subject has arranged the boxes we have merely turned them upside down, retaining the same arrangement. We have asked the subjects to use one hand when two have been used.

² The general practice of requiring authors to subsidize the publication of their experimental monographs in psychology, the revenues from the sales of which rarely enable the author to recover his initial investment, makes it necessary to utilise the medium of the periodical press. At the present time we are more in need of grants for the publication of original investigations than for the prosecution of researches.

³ Based on the total number of boys (703). ⁴ Based on the total number of girls (297).

⁵ Based on the total number of boys and girls (1000).

Only 27.8 per cent of these subjects were diagnosed as feeble-minded. Those who roughly classify children into two categories, normal and feeble-minded, would have classified a considerable majority of them as normal. In analyzing our mass results it should be remembered, however, that some of our subjects were feeble-minded. Only twelve of the subjects were epileptic (including one case of masked epilepsy¹), which is so small a proportion of the entire number as not to affect the general averages.

In this article we shall confine ourselves to a consideration of the data for the B.-S. weight discrimination test placed in Age IX in the 1908 scale and in Age X in the 1911 scale.

The Weight Discrimination Test.

Our interest was attracted to this test in 1910 because of the very unsatisfactory results which we obtained from its use on epileptics, when we strictly adhered to Binet and Simon's method of administering the test. When administered in the classical way, success in the test depends not only on the ability to discriminate small differences in weight by the kinæsthetic sense, but also on the ability to follow verbal directions. But when so administered it is frequently impossible to determine whether success in the test depends primarily on keenness of muscular sensitivity or on ability to understand the directions. In preliminary trials on epileptics in 1910 we found that the test was entirely too difficult for epileptics who graded in the B.-S. age in which it had been placed, or in any of the higher mental ages. Some of these obviously failed because they were unable to distinguish the difference between the weights, but many failed because they were unable to comprehend the instructions. We found, however, that many of the latter succeeded when once the directions were understood. Moreover, the only way of getting many epileptics to understand the test was to demonstrate the method of procedure. Many were unable to execute the test from repeated instructions according to the B.-S. procedure, so that almost in despair we adopted the procedure described in our Guide (pp. 123 and 133). We have usually only hefted three or four of the boxes, but as stated on page 80 we have never placed them in position.

Under this method of administration we still found the test entirely too difficult for the IX-year epileptics, only 44 per cent of whom succeeded in the test, while it has also proved too difficult for the IX-year olds in our non-epileptic group, only 59.4 per cent of whom passed the test (based on 133 IX-year records). The results

¹ We have not followed Lombroso's conception of epilepsy.

are somewhat discrepant among other investigators who have tested "normal" or unselected children, only some of whom have adhered to the original method of administering the test. Decroly and Degand concluded that it belonged in the fifth or sixth year, while Goddard retained it in age IX, because 80 per cent of 55 nine-year olds succeeded, while singularly only 40 per cent of 40 eight-year olds succeeded. The record for his ten-year olds is based on only four cases and cannot, therefore, be used for comparison. On the other hand, only 30 per cent of Johnstone's, 55 per cent of Terman and Child's, and 60 per cent of Bobertag's nine-year olds, and 78 per cent of Bobertag's ten-year olds passed the test—the number of cases examined by each of these investigators in these ages being only 30, 49, 40, 32, respectively. Binet and Simon placed it in age X in the 1911 revision. In several of the above investigations, therefore, the test has proved too difficult for Age IX, on either the 60 per cent or the 75 per cent standard of passing.

Terman, who retains the test in Age IX in his latest revision, prescribes a different procedure for the two boxes in Age V than for the five boxes in Age IX.¹ He does not approve of our method of illustrating the procedure, on the ground that the "experiment was not devised primarily as a test of sensory discrimination, for it has long been recognized that individuals who have developed as far as the 9- or 10-year level of intelligence are ordinarily but little below normal in sensory capacity." He regards it rather as a test of ability to comprehend instructions, to keep an objective in mind and find the means of reaching the objective. He apparently feels that the test does not correlate very closely with "true mental age." We have analyzed our data on this point and find, on the contrary, a very significant correlation with mental age (B.-S.), as shown by the percentage of successes in each B.-S. age from VI to XIII:

B.-S. Age	VI		VII		VIII		IX		X		XI		XII		XIII	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Boys.....	19	10.5	73	23.7	141	40.4	95	65.2	123	68.0	67	76.1	3	100.0	10	70.0
Girls.....	5	30.0	34	11.7	67	23.3	38	44.7	38	57.9	14	71.4	3	66.6	1	100.0
Both.....	24	12.5	107	23.3	208	36.5	133	59.4	160	65.0	81	75.3	6	83.3	11	73.7

¹ Our percentage of successes for the two boxes in Age V was 66 per cent for the V-year old epileptics (based, however, on very few cases), and 92.8 per cent for the V-year olds in the non-epileptic group, being 96 per cent for the boys and 87.5 per cent for the girls (based on 42 boys and girls). According to our results for the non-epileptic group the test is too easy for Age V, a finding in harmony with the conclusion of Petersen and Doll: "Sensory Discrimination in Normal and Feebleminded Children," *Training School Bulletin*, 1914, November and December. This article gives the latest summary of experiments on weight tests.

There is a decided increase in the percentage of successes in every ascending age except XIII—the data in the two upper ages, however, being based on only a few cases. The increase is particularly marked in the lower ages. The amount of increase in the percentage of passes between the successive ages from VI to XII is: 10.8 per cent, 13.2 per cent, 22.9 per cent, 5.6 per cent, 10.3 per cent, and 8 per cent. The increase holds fairly uniformly for both the boys and the girls. Not only so, when the data are averaged separately for each intelligence category, we likewise find a decided increase in the ability to perform the test with each higher category of intelligence, with only one exception, as shown by the following percentage of successes:

	Imbeciles		Morons		Borderline		Backward		Retarded		Normal		Accelerated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Boys.	14	14.2	83	36.1	70	57.1	236	56.2	70	52.8	39	61.5	4	75.0
Girls.	5	20.0	52	28.8	26	34.6	79	44.3	18	40.0	14	35.7	10	80.0
Both.	19	15.7	135	33.3	96	51.0	315	53.3	88	50.5	53	54.7	14	78.5

This is a strikingly significant increase in view of the fact that many chronological ages are contained in each intelligence category. The increase between the morons and the borderline amounts to 17.7 per cent. It is evident from our results that the test, as we have given it, is not purely a test of sensory discrimination—nor can it be administered purely as a test of sensory discrimination—but also of intelligence. Success in the test, even when given primarily as a sensory test, depends upon two factors: first, the subject's keenness of sensitivity and, secondly, his grade of intelligence. This is merely a specific instance of the assumption, justified on other grounds, that there is a specific and a general factor involved in any mental experiences, the specific factor being correlated with the functioning of a specific cortical area and the general factor corresponding to the functioning of the adjacent or associated areas and the general tension or activity of the cortex as a whole. The ability to perceive differences in the weights postulates the ability to attend, to retain mental impressions of the weights that have been hefted, to compare these impressions, and to keep the task constantly in mind as the weights are being hefted—certainly no insignificant intellectual problem. In fact, success in the test, when administered as a sensory test, depends more on central than peripheral factors. We find, therefore, in harmony with this interpretation, that the normal or backward pupils do better than the morons, and the morons better than the imbeciles in this sensory test. In a series of other sensory

and perception tests on epileptics and normal children the results point to the same conclusion (described in a monograph on "The Measurement of Mental Traits in Normal and Epileptic School Children"). Similar results have been obtained by Wiley and Norsworthy, while the results of both of these investigators, however, agree with our own in showing that the difference is greater for complex than for simple traits. Binet and Simon's conclusion that the imbeciles' fineness of perception equals or nearly equals that of normal persons was based only on three defectives and only one normal, evidently belonging to the lower grade of normals. Petersen and Doll in a different experiment on the discrimination of weights found that the feeble-minded were slightly more obtuse than the normal of the same mental age, but this is ascribed to intellectual rather than to sensory factors. We do not think it is possible in the way this weight test is administered to isolate, except theoretically, the sensory elements in the complex, so as separately to measure the elemental sensory experience. In practice the intellectual and sensory components are integrated or fused and can be measured only as a unitary whole.

Incidentally, it may be pointed out that we have found both imbeciles and morons who have been able to pass the test. Bobertag had said that no child of eight or nine who performs the test properly can be feeble-minded—and his method of giving the test approximates our own. We are less sanguine. We do not believe that the passing of any single test will prove any child to be normal, nor that the failure on a single test will prove any child to be feeble-minded, except in perfectly obvious cases.

Conclusions.

1. Success in this weight test depends both on kinæsthetic and on intellectual factors, even in the simplest practical form in which it can be administered.

2. The successful performance of the test increases with ascending B.-S. age and ascending intelligence classification. It is possible that if the kinæsthetic elements could be measured wholly independent of the intellectual—i. e. as elemental sensory experiences—there would be no such increase or that it would be greatly reduced. But the increase occurs even when the test is administered in its simplest practical form. This being the case,—

3. It seems unwise to complicate the test by making the directions difficult to follow—by converting the test into a difficult directions test: the test is already difficult to perform because of the small

differences between the weights, and the ability to perform the test already varies with mental age or intelligence.

4. Specifically the test is sufficiently difficult for Age IX, without the addition of the difficult "directions test" feature. Indeed, we are not convinced that it is not *too* difficult for this age—there is as yet no agreement on the percentage of passes which should constitute a test normal for a given age.

5. The improvement in the test with increasing mental age or intelligence—also shown by Petersen and Doll in their test on feeble-minded and normal children—would seem to indicate that its use as an intelligence test is legitimate. It happens, of course, that some bright children of considerable maturity occasionally fail on the test, while imbeciles may succeed.

6. In our results the boys surpassed the girls in all the B.-S. ages and in all the intelligence categories except two. In our previous test of epileptics the boys, again, surpassed the girls. These boys, however, averaged somewhat higher in intelligence than the girls. The findings among other experimenters are somewhat discrepant.

7. Our earlier¹ conclusion that epileptics "apparently suffer from a *blunting of the kinæsthetic sensitivity*" seems to be reinforced by the data presented in this article, for the percentage of successes in the test was less for the epileptics than for our non-epileptic group of the same B.-S. age. Naturally our results for the epileptics are less reliable because the number examined was less.

¹ As before, p. 54.

CLINIC REPORTS.

XIII.

Deborah was brought to the Clinic at the age of 13 years 1 month by two social workers because of backwardness in school subjects, especially arithmetic.

Her appearance immediately suggested insufficient nourishment, which the principal of her school gave as the cause of her backwardness. He thought it unwise to place her in a special class as he said that she was behind her grade in only one subject.

In height Deborah is below the mean for a girl of 12 and her weight is only the mean for a girl of 11 years; her head girth is the mean for a child of 8. She is the oldest of five living children. Both the father and mother drank, and in the few months before Deborah's birth, the man was out of work and the mother did not have proper food. There was nothing unusual about her birth or childhood. For three months the mother gave her "Mother's Comfort." They then refused to sell it at the store, saying that it contained a drug.

The mother said that she walked, talked, and cut her teeth as soon as the other children, but she could not give the dates. She showed a photograph of a plump little girl of about three years to prove that Deborah was a healthy child, although she said she recognized now that she was different from the other children, and she thought that her own drinking and lack of food during pregnancy, or the medicine which she gave to her might have caused it. The only differences that she could describe were absent-mindedness and inability to learn arithmetic. An old gentleman, a friend of the family, would teach her numbers at night and in the morning she had forgotten them. She was proud of Deborah's ability to read and she said that she read her Bible a great deal and loved to go to Church and Sunday School. None of the children were allowed to play with the neighborhood children as the mother felt that they were bad and rough. A social worker reported that Deborah did a great deal of housework and the stories which her mother told to illustrate her absent-mindedness corroborated this.

The child's present health is good although she tires easily. Dr. Rhein diagnosed the case as anemia and gave her a tonic. She has had only measles and whooping cough, no accidents or operations, and she has not yet menstruated. Her eyes are refracted and the eye defect has been pronounced serious.

Deborah began school at 7 years, 9 months. She was one term each in 1A and 1B; three terms in 2A when she changed schools twice; two terms in each of the other grades to 4B to which she was promoted in February of this year.

The teacher in whose grade she was for a year, said that she was very good in all her subjects but arithmetic. She could reproduce what she read if she wrote it out. She was nervous and might not always do well if she had to tell the story. She thought it too bad to keep her back because of the one study and had promoted her. She said that many other children were as bad in arithmetic as Deborah.

Her present teacher has had her only since February 1st. She was surprised to find that she could remember nothing of a geography lesson that she had just been studying. The day before she had missed 7 of the 15 words in spelling. In language and reading her last standing was 8 but in the other subjects she barely passed and in arithmetic she stood at 5. Deborah acknowledged that she knew nothing about fractions which she was studying. In reproducing

the Legend of St. Valentine she failed, although she could answer some questions about it.

In writing she was the only child who misunderstood the teacher's order to hold her pen-holder upside down, and the day before she had evidently made the circles with the pen in that position when they were expected to make them with the pen-point. There were only two others in the class whose writing lesson showed as little understanding of the teacher's orders as Deborah's did.

The teacher had just come from a class of backward children and the children in 4B seemed very bright to her with the exception of Deborah who, however, did not seem to her feeble-minded. She thought that she was very suggestible. The day before she had denied having anything in her mouth, but when told to take what she was eating out of her mouth and put it into the scrap basket, she immediately did so. She is usually obedient in school, likes her teacher and the school, does not have difficulty in getting along with other children and her teachers like her. A social worker who took her to a summer hotel several years ago, found her most adaptable.

Her home is in a poor neighborhood in a three story brick house out of repair. The mother is not a good housekeeper, acknowledges that her husband has to do the baking for the week on Sunday and that she cannot cook well. She usually has one thing for a meal, as potatoes or cornmeal mush, but the first are so high now that she is not buying them. Deborah does not like cornmeal and eats bread and molasses with tea, as she does not like milk. She is very fond of ham when she can get it. A neighbor made some tomato soup which the child enjoyed. The mother had never heard of putting milk into tomato soup. She was willing to have someone teach her how to cook, and seemed pleased that a teacher in a nearby settlement house would give her lessons.

The family owe nearly a hundred dollars. Most of the debt was contracted when the man was drinking, but about \$15 is due on furniture recently bought. His earnings are from \$15 to \$18 a week and he tries to pay from \$3 to \$5 on his loans. Three years ago he was persuaded to give up drinking and unite with the Church. He goes regularly, belongs to a Bible Class and to the Men's Club which meets Monday evenings. He is 46 years old, a machine repairer, has had a high school education and might get better work, but his employer has been very kind to them, loaning them money for coal in the middle of the week and not taking the full amount out of the man's wages at the end of the week if he could not spare it, so he does not want to leave him.

The woman was in the third grade at thirteen when she ran away from home because her parents were strict with her. She got work in a factory. Although her husband was drunk when she first met him, he was kind to her and gave her good advice and she was lonely, so at seventeen years she was married. She had him bring the beer home and drank with him until seven years ago. Just before her first child was born, her husband was drinking harder than ever and not working, so that she was hungry and followed him around to the saloons. Her mother, to whom she had become reconciled, died and she felt the loss. This eldest child was recently examined at the Polyclinic Hospital and her Binet age was given as 1 year. The principal of the school says that she can learn nothing.

There are three other children, 8, 6 and 3 years, all bright looking and well nourished. The two older ones are in school and are respectively in the 3B and 2A grades. The woman said that she had had about ten miscarriages. She is now 34 years old and is not well. As she seemed very suggestible and uncertain about dates, one could not be sure of the accuracy of her statements. She could tell of no relatives who were diseased or mentally deficient.

Deborah's mental examination showed more than backwardness in arithmetic. In the formboard her median time was longer than that of a girl 6 years old and the performance was qualitatively poor; she failed in the cylinder test and the Healy puzzle A and had to be prompted in the design blocks. Her memory span was 6 digits and her Binet age 8.7 years.

The diagnosis was not higher than middle grade imbecile, Barr classification, and she will eventually need institutional care.

In studying the cause of Deborah's mental condition, one's first impulse is to attribute it to the alcoholic condition of both the father and mother, especially as the sister is also feeble-minded and born during the period when the mother was drinking. After she gave up liquor, there were three children born who seem to be normal.

Four other interesting alcoholic cases have recently come to the attention of the Clinic. They are as follows:

2. J. H., 7 years, 8 months old, tentatively diagnosed as middle grade imbecile (Barr) has a father who drank just before he was born and his mother said that she did not get enough to eat when she was pregnant. The father's father died of alcoholism. Other significant facts are that the boy's paternal grandmother, after being a nervous invalid for 8 years, died of specific paralysis; that the father of the boy left school at 14 years, and his sister said he was always bad.

3. M. M., 11 years, 4 months old, diagnosed as probably a middle grade imbecile (Barr), has a mother who was so drunk when a visit was made at the home to get information about the family, that she went to sleep while the visitor was there. Fourteen beer bottles on the table would indicate that others in the family drank as well as the mother, but no information could be obtained about the family history.

4. M. D., 13 years, 8 months old, whose school record showed 5 years of school retardation, has a mother who was drinking before Margaret was born and is so constantly under the influence of liquor now that it is impossible to persuade her to do anything for the good of the child. A significant fact in Margaret's history is a positive Wasserman test.

5. J. M., 18 years old, brought to the Clinic because of his criminal tendencies, has a father who has been drinking for the past 14 years. At that time the man was threatened with tuberculosis. Three brothers have died of the same disease and one is now at Mt. Alto.

With these five cases as a text one might preach an excellent temperance sermon, showing how alcohol injured the germplasm of the child, leaving its mark upon the brain. But in each case, where the family history could be obtained, there were other factors that have been assigned by psychologists as causes of mental deficiency. In the first there was the mental condition of the mother which might have made the case one of heredity, or the insufficient nourishment of the mother might have affected the germ plasm* or the mental condition might have been inherited from the father, but so little is known of his history that no statement can be made. There is simply the significance of the age at which he left school.

The same may be said in the third case. In that it is not even known when the mother began to drink. In the fourth case the presence of syphilis might be as definitely a cause as alcoholism.

The last history shows the necessity of learning the age of the parents when they began to drink, for the boy was four years old before the father used liquor,

* In the second case there was also given a history of insufficient nourishment of the mother.

so that alcoholic inheritance could not have caused his non-conformed behavior, although both the father's alcoholism and the boy's behavior might have been due to the same inherited tendency.

These cases would indicate very conclusively that, before alcohol can be given as a cause of mental deficiency, proof must be offered that it is the only factor in the case.

ANNA B. PRATT, M.A,
Graduate Student.

XIV.

Judith was brought to the Clinic by the woman with whom she is now living, at the suggestion of the Social Service Department of the University Hospital, mental deficiency being suspected.

We have only partial knowledge of the family history, but we know that the mother died six years ago of tuberculosis after which the father ceased to support the family. Just why the home was broken up we do not know, but it is thought that the father was alcoholic and had little interest in the children. He has, however, again obtained control of an older sister who has reached the working age, and he has given indication of wanting control of Judith as soon as she can go to work. We are told that both this sister and an older brother appear dull and failed to go beyond the fourth grade in school.

Judith is fifteen years and two months of age, but does not look more than twelve. Her physical retardation is from two to three years and the physiological retardation is as great. She is still in the preadolescent period. She has the mobile features and far-away look so commonly found in cases of feeble-mindedness. She has been under treatment for enuresis, from which her sister has also suffered.

The pedagogical history is badly confused. There was probably some school attendance before the sickness of the mother, but before she came to her present home in 1912 there is no evidence of any progress. During the next three years she made good progress but was then sent to a Catholic Home because of the illness of her benefactress. From that time until the present school year she did not attend regularly. She was placed with a family about a year ago, but ran away one rainy winter night and came to her present home, some twelve blocks away. She gives as a reason for this that the other woman drank and abused her, which may have been true, though the abuse seemed to be confined to language. Since then she has been sent to a Catholic school, where her work has been unsatisfactory. She wants to leave school and gives the usual excuse, that she does not like her teacher. She is now in the fifth B grade.

Being of a pleasant disposition, Judith does not give a great deal of trouble and gets along quite well with the other children at school and at home, there being three younger girls in the home in which she now lives. She plays but little, often standing around merely looking on when the others are at their games, and even when she does take part, her actions are not normal. She plays at such times very violently and breaks into harsh, uncontrollable laughter. Little is asked of her in the nature of household duties and even these she cannot perform without repeated instruction and constant oversight. She takes very little interest in her personal appearance, combing her hair only when told to and giving no attention to her clothing. What has given the most concern in the home has been the periods of stubbornness of a depressed kind, which arise from slight causes and last for hours, during which she is said to "look like a

totally different child." The description of these may have been overdrawn, as is not uncommonly done in the attempt to justify bringing a child to the Clinic. They do not seem unlike the spells of stubbornness frequently found in children of low mental status, but it would be well to watch for evidences of insanity.

The mental examination of Judith gave us less than we might have desired. The cylinder test, the design blocks, the Healy completion and similar tests gave fair results, though none were above the normal for thirteen years. The Binet tests (Stanford revision) gave a rating of ten years, eleven months, or an intelligence quotient of .72, which is rather significant. She fatigued quickly, showed a slow rate of movement, though with good control and coordination. Several times when concentration was demanded of her, she stopped completely, remained looking at the task with no response of any kind despite continued urging, then would suddenly break out with some childish response, as when looking at a picture for some time she said, "George Washington is going to leave her and she is crying," or again when she retraced her steps about the entire field in the ball and field test after an interval of several minutes during which she had not moved her pencil.

Upon a basis of the history, modified by the mental examination, a diagnosis of high grade imbecile (Barr classification) was made. It is probable that under pressure Judith will be able to do housework, with a certain amount of guidance, but owing to an unfavorable disposition toward work, she may prove incapable of supporting herself. We would not recommend her for institutional care because of the fact that she would be displacing others who could not be cared for outside.

XV.

This case illustrates the abnormalities of conduct to be found in cases of hydrocephaly.

Moses is a colored boy of eight years and eight months, who was brought to the clinic by his mother and teacher because of his bad behavior and his inability to make progress.

The parents are a particularly high grade of colored people, of excellent habits and able to give the boy a good home and the proper kind of care.

This boy is the fourth child; the first and third died following injuries at birth. All the births were instrumental. He had an injury to his head at that time, the mark of which still remains in the form of a lump. He was born at three weeks overtime.

Up to one year he was nursed, walked and talked at normal time and showed then no abnormalities. From the age of one year up to five, he was under the supervision of physicians because of stomach trouble, indigestion. The mother gave close attention to his diet and in time this was overcome. His physical history has been otherwise negative.

His pedagogical history has given more evidence. He was in the first grade A class for two terms but has since been passed each time, and this fall he entered the second grade B class. Last spring it was found necessary to send him to a backward class, but after he had been there a week without the knowledge of his mother, he was removed because she objected to keeping him where she considered his associates to be very bad. A truant school is in the same building and the children from the two groups intermingle. At present he is not making satisfactory progress at school. He works well at manual work, basket making, etc., but does not study at all.

In the mental examination, Moses presents the type of results commonly found among negroes. The formboard, cylinder test and design blocks are handled very well, his performances being above the mean for his age. In the Binet tests, he is found to rank at seven years, two months, with an intelligence quotient of .83. His best performances are on such tests as the drawing of the diamond, the ball and field, and patience. On the more abstract questions, he completely fails, such as the definitions, similarities and making change without coins. The mental examination may be said to show his intelligence to be normal.

The abnormalities are to be found in his behavior. The mother has no complaint to make of him in the home, except that he is cruel to his younger sister. He is honest, carrying the clothes for her and returning with the money, running other errands promptly and correctly. She has followed him in order to discover whether he does anything that he should not when sent on errands, and has seen nothing. No trouble is experienced with him on the way to or from school, but when once there he causes trouble for the teachers and disturbs the classes by going anywhere he wishes without permission, kicking and pinching other children, talking aloud when he should be studying, and doing numerous other petty things. Yet these seem to be done in no spirit of meanness, for he is surprised when reproved, and immediately breaks into tears. His own account of some of these things seems to indicate that he is merely playing and has no desire to hurt, but he wants to do something other than study, for he does not like his books. So much of this has occurred that the teachers feel they cannot bear his presence longer.

His bodily development is at least in the maximum group of the tenth year. His head has a girth of over 55 cm., greater than the maximum for the sixteenth year. His face is not as large proportionately as his skull, and the upper part of the forehead protrudes slightly. The mouth hangs open.

The diagnosis of this case is hydrocephaly, coupled with an overdevelopment of the body. His acts are particularly objected to, because they are those of a seven year old boy with the bodily force of an eleven year old. To this disproportion is due the seriousness of his playful acts. His general attitude; his restlessness under restraint and his lack of inhibition are due to the hydrocephalic condition.

The recommendation was made that Moses be placed in a special class, where he could have the supervision that is needed and where his actions are less likely to cause disturbance than in a crowded school room. There he may be given work of a kind to occupy his mind and he will gain more than he would do in the ordinary class room. As the mother objects to placing him in the particular backward class in her district, it may be necessary for them to move to a part of the city where a satisfactory school can be found.

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REVIEWS AND CRITICISM.

The Effect of Humidity on Nervousness and on General Efficiency. By Lorle Ida Stecher, Ph.D. Archives of Psychol. No. 38, Dec. 1916. New York: The Science Press. Pp. vi + 94.

"This study," explains Dr. Stecher in her summary, "was undertaken primarily to investigate the supposed effect of air of low relative humidity upon nervousness as shown by defective motor control, and upon general inefficiency in work similar to that performed in daily life by clerks in offices and operatives in factories. Since tests cannot be given often enough to obtain reliable measures of a changing condition without having the influence of the variables obscured by practice, the following device was adopted to balance out the practice effect. Subjects were tested in squads for a fortnight each. The first squad spent its first week under the wet, its second under the dry condition. The second squad spent its first week under the dry; its second under the wet condition. For each test an average for performance in the wet weeks was obtained by adding the first week of Squad A and the second week of Squad B. A similar average for the dry weeks was obtained by adding the remaining weeks. By averaging the data from a number of squads, half of which were at the beginning and half at the end of their practice curve, the practice was pretty well eliminated."

The psychological tests used were,—addition, aiming, hand steadiness, tapping, typewriting, arm steadiness, mirror tracing, industrial fatigue, reflex wink, and eyelid tremor. "By these tests of nervous and motor control," Dr. Stecher observes, "and by the more purely intellectual tests we could detect no influence of excessive dryness during two weeks' exposure or during the working day. . . . The practical situation is that experimental humidity conditions considerably more rigorous than those obtaining in any artificially heated apartment show no demonstrable effect in behavior. Similarly, wherever psychological tests have been used in ventilation studies, the results have been negative. . . . Still," she cautions, "our finding that individuals put under certain controlled conditions react or fail to react in certain ways is by no means to be taken as sanction for all sorts of uncomfortable ventilation conditions. . . . we did not attempt to reproduce the conditions that go to make up a crowded, ill-smelling, and excessively hot room. . . . If this absence of demonstrable effect is due to a constant adjustment of the organism that will eventually result in a strain, it is for physiology to trace any subtle, long-time, ill effects that may have escaped the behavior tests."

Dr. Stecher's monograph "is part of an extensive investigation of the subject of ventilation in its various biological and mechanical aspects, carried on during the years 1913-16 by the New York State Commission on Ventilation. . . . by the aid of the Elizabeth Milbank Anderson Fund. The other psychological experiments of the Commission which were, like this one, planned by Professor Edward L. Thorndike and carried out under his direction, are described in full in a recent number of the Teachers College Contributions to Education, and briefly reviewed in the historical section of this monograph."

The tests which Dr. Stecher used she describes in every essential detail and presents her results in well studied tables and curves. The bibliographical references given in the form of footnotes, constitute a guide to the further investigation of the literature of the problem. In her chapter on correlations the author remarks, "To bring together this loosely connected group of correlations into any sort of consistent scheme is almost impossible. These conclusions can be drawn: 1. The distinction between the purely intellectual mental-multiplication and the motor tests, particularly the inverse relation with those designed especially to test nervous control—hand steadiness, arm steadiness, tremor—seems

evident. 2. Addition is not an intellectual performance of the same order as mental multiplication, as is shown by its incomplete resemblance to mental multiplication .22, and by its tendency to correlate positively with many of the motor tests to which multiplication is opposed. 3. Typewriting seems to hold a sort of intermediate position between a purely intellectual and a purely motor test. 4. Mirror tracing seems to be somewhat the same sort of test as typewriting."

Taken altogether, Dr. Stecher has done an admirable piece of work that must be of value to architects and hygienists as well as to psychologists. A. T.

The Psychology of Special Abilities and Disabilities. By Augusta F. Bronner, Ph.D. Boston: Little, Brown and Co., 1917. Pp. viii + 269.

Dr. Bronner opens her preface with an amazing statement. She says, "nowhere else have special defects been outlined and nowhere can one find even enumeration of the types of variation that are practically important." Leaving out of account the enormous literature on special defects of the language function—aphasia—one has only to take down the files of the Psychological Index to find abundant proof that Dr. Bronner's view of the matter is uniquely limited.

She attempts in her book "to discuss practical aspects of special abilities and disabilities, to offer in detail methods of attacking problem-cases, and to present various types, both (a) of particular disabilities in those who have normal general ability, and (b) of particular abilities in those who are below normal in general capacities." When she goes on the say that "the problems we are here concerned with are those that arise because of lack of recognition of special abilities and special disabilities—problems even outlined, so far as we know, only by Healy," we find ourselves again in the presence of the serious limitations of the work.

The chapter on differential diagnosis is particularly weak. Take for example a loose statement like this: "She had been tested in several other laboratories, in one of which she was diagnosed as feeble-minded, a diagnosis made, no doubt, without any recognition of the fact that she was unmistakably a case of hysteria and that therefore actual test results required interpretation in the light of this fact." Here the author appears to be overlooking two important principles of diagnosis, (1) the social criterion of feeble-mindedness, and (2) the recent work of Bolton who classes hysteria with other forms of amentia. Again she makes a statement which is more than loose, when she says, "Aphasia, alexia, agraphia, word-deafness, and other such disturbances are, as defined by neurologists, always due to brain lesion and not to innate defect; they involve loss or impairment of power that once existed." Such a misstatement can only rest upon an insufficient acquaintance with the authorities.

Understanding Dr. Bronner's attitude toward the many workers who have preceded her in her chosen field, we shall not wonder at the absence of a bibliography in her volume. Her forty-six case histories are well presented, especially as regards the enumeration of formal tests. Nevertheless they are not subjected to a searching analysis. The method which was promised in the preface is not forthcoming, and the conclusions do not always seem to be supported by the available facts.

No one will differ with Dr. Bronner's opinion that the clinical psychologist "must have the ability to analyze the results." But because her book has in it so little of psychological analysis, it does not detach itself in any distinctive way from the other compilations of case histories which have preceded it. T.

NEWS AND COMMENT.

Patriotism through Education.

Carrying forward the recommendations of the Committee on Patriotic Education adopted at the Congress of Constructive Patriotism in Washington on January 29, 1917, it is proposed to organize a campaign of lectures on patriotic topics in order that the people of the United States may be generally informed of the cause of the war and the varied needs of the nation for defense and victory.

Everyone who knows the gravity of our struggle, must feel that service in the field of patriotic education is as essential as in the battle ranks. The lecture system is being prepared, and it is hoped to enroll speakers for a country-wide campaign. A preliminary meeting for organization was held May 12th in the Engineering Societies Building, New York City, and further announcements will soon be ready. Professor Albert Bushnell Hart is chairman of the committee, and may be addressed at Harvard University, Cambridge, Mass.

Plans for Iowa Child Welfare Station Announced.

With the \$25,000 a year that was voted by the legislature for establishing a child welfare research station at Iowa City, the State University will finance investigations of parental care, of feeding, of disease prevention, of social conditions affecting child life, of the home as a factor in educating the child and forming character, and of methods of applying psychology to child development.

The undertaking will be the first effort made in a large way in Iowa for the good of the child who is well. Of the thousands of dollars spent for philanthropic purposes practically all go for the betterment of defectives.

The child welfare work begins this summer. At first attention will be concentrated on some two or three lines of research, to be selected as soon as the staff is formed. A committee is now at work on preliminary steps toward forming the organization provided by law.

In some respects the work of the station will do for human life what animal husbandry experiment stations have long been doing for the care of animals. It will investigate the conditions in Iowa that produce ill-born children and those that produce well-born children.

By experiments the best methods of feeding children to produce health and efficiency will be worked out in the University hospital. The values of various foods, as well as their costs, will be determined.

Plans include an investigation of the causes of infant mortality, through which it is hoped that the public can be awakened to preventive measures of all kinds, not only in warding off disease but also in aiding the production of superior bodies and minds.

The station will seek figures regarding births and deaths of infants and the maiming, stunting, dwarfing, and reduction of vitality of those who survive. Sanitation, housing conditions, food supplies, and working conditions of mothers as affecting child welfare will be studied.

The child learns more during the first five years than in any other equal period of his life; and, at the age of five, the child's character is well set. Little work has been done in devising scientific methods for mothers to use in educating children and moulding character during this telling period. To supply the need

will be one of the aims of the station, under the direction of Dr. C. E. Seashore, head of the department of psychology.

Already psychologists have found ways to analyze the fitness of children for several vocations. They have learned how to diagnose and treat mental defects. Further applications of psychology will be sought.

Results of the research work will be announced from time to time in pamphlets, in newspaper and magazine articles, and in bulletins designed to assist mothers and fathers and others who have to do with the rearing of children.

Preparedness and Good Health.

In the Report of the U. S. Commissioner of Education for 1916 is a chapter (XIX) by Mr. Willard S. Small, Principal of the Eastern High School, Washington, D. C., which is of particular interest to patriotic educators. "Once in a lifetime," he says, "or it may be once in a century, the common mind of a nation is so aroused and unified as to make possible far-reaching educational reconstructions. . . . It has required the scourge of fear, born of the horrors of the great war, to make vivid and real the thing that everybody has known. The statistics of rejection of applicants for enlistment in the Army and Navy have been available for years and have been quite as significant heretofore as they are in 1916. . . . In interpreting these figures it must always be remembered that the physical standards for recruits are very rigorous, and that most of the recruits in time of peace are young men who are temporarily out of employment, this second fact carrying the implication of a large admixture of physical incompetency. Allowing for these facts, however, the figures are sufficiently impressive.

"In the year 1915 there were, in round numbers, 160,000 applicants for enlistment in the U. S. Army. Of these 117,000 were rejected upon preliminary examination, and 7000 of the remaining 43,000 were rejected upon detailed medical examination; 30,000, or about 20 per cent, were accepted.

"The records of the Bureau of Medicine and Surgery, U. S. Navy Department, for the year ended December 31, 1914, show that of the 72,410 applicants for original enlistment in the Navy and of 20,674 in the Marine Corps, 76 per cent of the former and 82.4 per cent of the latter were rejected for physical and mental disabilities; and that during the year ended December 31, 1915, there were 73,028 applicants for original enlistment in the Navy, and 21,676 in the Marine Corps, of whom 75.4 per cent were rejected by the Navy, and 83 per cent by the Marine Corps, for like causes."

Mr. Small gives a table of the percentage of rejections for various causes, explaining that it "does not tell the story as completely as would be desirable: (1) The *all other causes* (ranging from 48 to 59 per cent) is entirely too large. This includes such causes as underheight and underweight, which do not necessarily connote physical inefficiency. (2) There is probably a disproportionate amount of rejection on account of visual and dental defect. Requirements in these respects are very rigid and such defects are easily detected. This qualification cuts both ways: (a) Individuals rejected for these defects may have other more serious defects that are unrecorded; (b) individuals having these defects in sufficient degree to warrant rejection may be absolutely sound in other respects and, hence, very efficient physically."

"The really impressive thing revealed by these figures," in Mr. Small's opinion, is "the fact that a very large part of the disabilities recorded are of such nature that they might have been corrected or prevented in childhood by health supervision in the schools, adequate medico-physical examination, cor-

rective follow-up work, proper exercise and instruction in personal hygiene, and hygienic environment. . . . It would be illuminating if the statistics could be compared with similar statistics for graduates of high schools. Unfortunately such statistics do not exist. Few school systems provide for continuous and detailed examinations during the elementary school years and fewer still in the high school years. The high school graduates ought to be a selected group, physically as well as mentally, but most persons who are familiar with the situation would hesitate to predict that more than 50 per cent of the boys graduating from the high schools would meet the Army and Navy standards. The condition of those who are eliminated before graduation and of the much greater number who never reach the high school is even less favorable.

"It is this formidable fact—that the educational organization has tolerated physical inefficiency, even if it is not a contributing cause—that the interest in preparedness is bringing acutely to the national consciousness. The realization of the folly and extravagance of such a lack of policy will become more vivid in the next two or three years."

The Psychological Clinic

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VOL. XI, No. 4

JUNE 15, 1917

ORTHOGENIC CASES.

XII. A STUDY OF THE INTERPLAY OF PERSONALITY.

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It is hard to write a clinical study of Albert, easier by far to turn it into sheer story. To be sure, it was a case for psychological treatment, that came into our household one cold January day. And indeed, ours was a household where stern pedagogy and scientific training were supposed to dominate emotion and sentiment. Yet, in such a household, came a contact of races, Semite with Slav, an interplay of personalities, the impression of a mature Russian woman upon an adolescent Jewish boy, a contact that was intense, intimate, transitive. In that contact there was some quality of the elemental that swept aside scientific pedagogy and American reserve to let the experience mould the boy as it must.

We were fortunate in that of the two, the boy was the first to come to us. For five months therefore we had the opportunity to study his personality unmodified by the profound impression Mrs. G. made upon him.

Albert was something over fourteen and a half when he came. The clinical recorder described him as "a fat boy, big for his age but rather babyish looking." A pair of baggy brown tweed knickerbockers left most unbecomingly exposed a pair of very pudgy legs; a thick neck was squeezed into a stiff Buster Brown collar a size too small. A large head was set rather low on this fat body and crested with a riotous shock of coal black hair, curly and very stiff. The boy seemed overfed, overlarge for his clothes, but certainly not overclean. Yet there looked out of that full face a pair of brown eyes, a trifle small, but altogether straight, and the tilt to that curly black head was not unattractive.

The boy fidgeted nervously. He crossed his legs, pulled at the knees of his trousers, hitched up his tie, pawed his face, bit his nails and shoved his chair along the rug. The father and mother

who had brought him sat one on each side of the fireplace and talked volubly at cross purposes. On the right sat a tall German Jew of sixty, a shrewd business man, a little of the tolerant father. His pride in the persistent shrewdness that had raised him from the poverty of the immigrant dishwasher in a Bowery chop house to the millions he had amassed in building up a large manufacturing business was linked with unconsciousness of his patent lack of culture.

"When I was this boy's age," he said, "I had begun to make my own way in the world."

"Nonsense!" interrupted the mother. "I want him to pass for a gentleman in society." Then turning to the boy she snapped, "Take your hands away from your face, Albert."

She sat on the other side of the hearth, a plump, opulent woman, irritable and nervous to the point of hysteria. A sense of her superior culture made her manner toward both husband and son a trifle supercilious.

"But Albert never did get along in school," she continued. "He started in when he was six at a convent school and I've had him in seven or eight private schools since. He never got on in any of them. He's classed in with little boys of ten or eleven years old. Albert, stop biting your nails. He won't study; he's too lazy."

"He needs to be set to work," interjected the father. "If his mother would let me start him at the bottom in one of my mills——"

Again the mother interrupted, "His father doesn't understand the boy. Albert, take your hands away from your face. Mr. Y. takes him down to the office and lets him idle around all morning and go to a matinee after lunch. I'm the only person that can manage Albert. Albert, stop fussing with your tie."

The husband caught at the diversion to put in a word, "If I could get my boy to concentrate, if I could get him to think before he speaks, he would be all right."

But Mrs. Y. went on as though there had been no interruption, "Albert is lazy; he answers in any fashion to avoid thinking. He is gluttonous, sluggish, indifferent and thoughtless. Albert *will* you keep those hands still?"

"Don't fuss the boy so much, Baby," the father remonstrated.

Mrs. Y. was not to be stopped, "This last month he has completely disorganized my household. He makes trouble with the servants, and teases his sister all the time. She is very charming, quite like my mother, who is a most unusual woman, but Albert nags her all day long. Albert, I can't watch you chew your fingers another second. Go upstairs."

The boy went, his black head a trifle bent, and on the first step

he stumbled. In those first months, we never saw him go up or down steps without stumbling.

The parents left after a little and the coachman brought back the story of an hysterical scene on the way to the station, when Mrs. Y. stood up screaming, and threatened to jump from the carriage.

So they left with us the boy that together they had born and bred, to better, if we could, the botch they had made of it.

Albert had been excluded from schools for normal boys for two reasons: (1) because he could not "get on" in his school work; (2) because they could not tolerate his behavior. To inquire into his mental status is our first problem.

At the age of fourteen and a half Albert's proficiency in school work was not higher than that of a fourth grade pupil. Such an estimate is at best an approximation, for in some mechanical operations he had efficiency equal to that acquired in the seventh and eighth grades, while in others his performance level was as low as that of the second grade.

In arithmetic he could add, subtract, multiply and divide as rapidly and nearly as accurately as boys of the eighth grade. Of decimals and fractions he knew almost nothing. Tables of measure, he knew only sketchily, and could not apply at all. In the reasoning examples of the Courtis tests his rating was no higher than the second grade. Five months after he came to us Dr. Witmer wrote: "He cannot solve a problem which a boy of ten would be able to solve even though the problem itself requires nothing more than addition or multiplication."

Although he had studied geography and history for several years he knew little of the first and absolutely nothing of the second. His tutor remarked, "His knowledge of geography was in a nebulous state." He thought Scotland was in England, and London the capital of Paris—this in spite of the fact that he had been abroad three times and had spent many weeks in Paris. The information that America had whipped England in the war of the Revolution he received with absurd and pathetic jubilation as though it were a piece of news fresh from the front. In general information he was quite as hazy. He thought that Episcopalians were not Christians, and that there were five seasons, spring, summer, fall, autumn, and winter. Of current events he knew almost literally nothing. Possibly he knew the name of the President of the United States; I should not be surprised to find that he did not. He was ignorant of "charcoal, metals, hard and soft coal, plants, trees, and flowers."

Albert read "rapidly but with little expression from a sixth grade reader," and spelled well in the fifth grade. He was deficient,

however, in the meaning of words. Such words as *alderman*, *widow*, *scarf*, *profit*, *wares*, *conceit*, *deceit* he did not know the meaning of. He did not get the sense of what he read. A teacher wrote "A child of seven or eight could tell the story (one of *Æsop's Fables*) as well as he does." He could not understand a single paragraph in a newspaper about a baseball game that he himself had seen. He had read scarcely anything, in fact he could not sit still long enough to read a book more than five minutes at a time. After reading the first two pages of one of the "*Adventures of Sherlock Holmes*" he was in a maze as to what was happening, floundered a page or two further and then threw the book aside. We have all had a similar experience when reading in a foreign language with which we are but imperfectly familiar. Neither could he follow the relatively simple plot of a moving picture film.

Grammar was a confused mass of meaningless diagrams and definitions. He knew nothing of paragraphing, and could not reproduce stories because he did not understand them. On the other hand, he composed diaries and letters rather fluently. His sentences were sometimes involved and marred by misused auxiliary verbs and prepositions, and the sense suffered often from his inability to think consecutively. Yet taken all in all, composition was his long suit—his only long suit.

Nevertheless, Albert seemed to have more mental capacity than appeared in his school work. His memory span for digits was eight; under the best of conditions, nine, and even ten. Tested with design blocks and letter squares, his visual imagery seemed to be particularly vivid and accurate. He played a good game of pinocle and, indeed, taught one of the teachers to play. Checkers, a game, which when well-played, taxes the ingenuity, the resourcefulness, the genuine intelligence of the players, Albert played exceptionally well. A game of checkers with Albert was a real match of minds, keenly stimulating. Mental examination revealed no specific mental defect in him other than a grave deficiency in persistent concentration of attention, a defect in the trainability of memory due to the immobility of his mind in the idea-complex forming process, and following upon these, a distinct limitation in understanding and in range of interest.

Albert was mentally lazy. He did not like to work and "played for time" all through his lessons. He failed to realize the seriousness of his deficiencies and wasted all his intelligence in the attempt to "bluff." He talked loftily about algebra and geometry when he had not yet mastered fractions. He could not fix his attention upon anything. His mind was darting here and there and every-

where. Moreover, he had no self-confidence and no self-control. He could not and would not buckle down to study by himself. He wanted someone perpetually by his side to drive and coax him on, and above all, to explain.

I should like, if I can, to picture to you Albert in the class room.

It was 9 A. M. on a spring morning. The class room was in the second story of the little school house, with sunny windows open wide. A boy with a stiff mop of rumped black hair came tumbling in at the window over the shed roof. Panting, he threw himself into his seat, mopped his forehead with a mussy handkerchief, then opened his desk, and pulled out a miscellaneous pile of books and papers. He slammed them on the desk, dropped most of them and half tumbled out of his seat to pick them up. At length he selected a note book marked "Diary" and cleared his desk energetically for work.

Just then, Mr. A. his teacher came in at the door. Albert jumped up, giggled, shot at him a volley of foolish remarks and questions, and finally settled down to work again. But his pencil needed sharpening. He leaped to the sharpener, and ground away vigorously, breaking the fresh point several times in the process.

After a series of wriggles, questions, and accidents, the diary was at last done and Albert was given an arithmetic problem involving two simple steps. With much rustling of paper, and squirming of body he finally succeeded in reading the problem.

"I don't know how to do it," he announced.

Mr. A. has said of him that there was "no problem of any difficulty whatsoever that Albert would undertake without a great deal of prompting, urging, and coercion."

"My father isn't a farmer," he went on loftily, "How should I know anything about bushels?"

With much grumbling he performed the first step. Then he stopped. He was unable—Mr. A. says he always was unable—to foresee the next step. Mr. A. adds further that Albert applied "not the slightest quantum of reasoning to his work." After he had been given one problem of a particular type, he tried to solve all others in precisely the same way.

Albert was helped through this problem and then through another. He wrote out the solution of the second carelessly. In the first line he spelled the word *flour* correctly. In the second line he wrote "flower." The day before he had written *flour* a hundred times because he had made exactly the same mistake.

Albert then began to study a history lesson but very shortly came upon the name "York River."

"Is the York River half as large as the Hudson River?" he asked. And he continued at intervals. "What is the largest river in the world?" "Is the Mississippi River the largest in this country?" "Does the Nile flow through Paris and Switzerland?" "What are you writing? I bet you're writing mean things about me."

After several minutes of feeble concentration he grumbled, "How do you think I can work with that lawn mower going outside?"

With twenty minutes of this kind of study, he announced that he knew his lesson. He recited in a random manner, and tried to coax his teacher into asking him questions that would be "leaders." The boy felt entirely content with his own half-knowledge and thought it very ill-natured of Mr. A. not to be satisfied with the recitation.

Mr. A. with infinite patience set about explaining the lesson, and illuminating it by an interesting anecdote and a striking illustration. During the explanation Albert dropped his pencil, twirled his eraser, balanced his chair on one leg, and gazed at the ceiling.

When Mr. A. had finished, Albert remarked casually, "There are twenty-six flies on the ceiling."

Albert spent his recess in running and climbing and chasing. At the end of the recreation period he clambered in at the window again to find another teacher waiting to give him a lesson in geography. She was a teacher remarkable for her firm control in the class room.

As soon as she opened the book and began to look severe, Albert burst out impulsively, "Gee! but you look pretty today."

Miss B. ignored the comment with dignity, but her preliminary explanation of the lesson, given with energy enough to make any boy sit up and pay attention, bore fruit only in a vague and dreamy remark, "Your eyes are the same color as your dress."

Judged on the basis of his proficiencies at that time, Albert's performance level was four or five years below what it should have been for his age. More than that, in his present nervous and undisciplined state, it was almost impossible to teach him anything. Yet none of us were willing to pronounce him definitely feeble-minded.

Dr. Witmer wrote of Albert from time to time after several months of observation:

"The boy has a pronounced mental retardation which undoubtedly rests on a physical basis of some sort . . . has grave infirmities of mind and character. . . . He cannot exert himself because he so easily falls into a state of mental confusion. He is extremely feeble in any effort requiring persistent thinking. He can do arithmetic, provided the work required of him is mechanical, but if any thinking is involved he flounders about trying first one process and then

another. He lives in and for a state of excitement. He has never been taught to work. . . . He inclines to resort to all sorts of expedients to avoid working and this has become such a habit with him that only little by little can I get him to do work requiring close application. He has what I should call a mind that skims and in skimming he fails to be accurate. Nevertheless, I am absolutely confident that Albert has more capacity than appears in his school work.

"His mental condition is a very puzzling one. In some ways he seems very normal, only to have wrong ideas and excessive nervousness, and an inability to think a thing out. But when it comes to making a consistent effort involving either physical or mental exertion, he oftentimes gives an impression of being mentally inferior."

The diagnosis of Albert's mental status, in so far as it was formulated at the time, was serious retardation in efficiency based upon mental confusion, and possibly upon actual mental deficiency.

In spite of this retardation in school efficiency we found Albert a boy of splendid physique, abnormally strong, redundant with energy and life. Indeed, his anatomical and physiological development was in excess of his chronological age. We found him, moreover, the typical adolescent, so typical that no school for adolescent boys would tolerate his behavior. He seemed, indeed, the epitome of adolescent tendencies and reactions pushed to the extreme. And behind the urge of his physiological age, reinforcing these tendencies, were the Oriental sensuousness that persists in many of his race, the crude egoism of the American *nouveau riche*, and the pressure of the neurotic heredity and environment in such a family as his.

To give substance to these generalizations, we must attempt a detailed description and analysis of Albert's behavior. For this purpose, it may be well to take G. Stanley Hall's list of "antithetical impulses" characteristic of adolescence.¹

1. "There are hours, days, weeks, and perhaps months of over-energetic action," followed by torpor, laziness, low tension.²

Albert was most often at the point of high tension, and with him tension was very high. On a walk, he never walked. He leaped down the terrace steps, six at a time, ran zigzag along the road crossing his feet to make the children laugh, vaulted gates, climbed barbed wire fences in his best clothes, scaled telegraph poles, and swung out on the limbs of the highest trees. At the station he usually chose to run the mile to the house, and though the coach-

¹ Hall, G. Stanley. *Adolescence*. New York: D. Appleton & Co., 1916. Vol. II, pp. 75-88

² *Ibid.*, pp. 75-76.

man lashed his horse in a vain attempt to beat him, Albert, pleased and panting was always at hand at our own steps to open the carriage door. In the house he was so strenuous that he broke the chairs in the living room, the towel rack in the bath room, and three-cornered gashes in his trousers were accidents of almost daily occurrence.

One recalls, too, the tendency noted by Hall¹ "to phonation in articulate and sometimes in animal noises, not perhaps so much to gratify ear hunger as to relieve efferent tension." His voice, growing each month deeper and deeper, boomed through the house in crude melody, and it happened often, when you came from town, that a wild black-headed youngster leaped down the hill to greet you with a squeak and an absurd shout of nonsense syllables, "Nee-no-ny! Nee-no-ny!"

At other times, particularly when there was work to be done, we saw Albert hanging around the house in *lazy* boredom, grumbling that there "was nothing to do in this old hole," lackadaisical, listless.

2. There are "oscillations between pleasure and pain," "tears and laughter," "exultation and depression."²

General good spirits and moods of downheartedness of course alternated in Albert. But more conspicuous in the boy were the specific reactions of tears and giggles. The "mental ticklishness" to which Hall calls attention³ was particularly acute. Albert giggled excessively, reflexly, uncontrollably—often at the blunders of others, more often at some allusion that he could in some remote way relate to his very sensitive consciousness of sex.

On the other hand, in the typical relaxation of energy and of reaction to stimuli that comes in the evening, tears of self-pity were frequently shed. He shed them because he was homesick, because his sister had not written, because his mother no longer cared for him, because he had offended someone in the household. These moods were very black and very genuine.

3. "Self-feeling is increased, and we have all forms of self-affirmation and self-distrust."⁴

Albert was supremely egoistic. He expected to monopolize the affection and attention of every adult in the house. He elbowed every other child away and claimed as his right the place next to the teacher. The place once gained, he could talk of nothing but himself, his lessons, his family, his troubles, his future. Several

¹ *Ibid.*, p. 21.

² *Ibid.*, pp. 76-78.

³ *Ibid.*, p. 78.

⁴ *Ibid.*, pp. 79-80.

times daily he repeated the insistent demand, "Honest, do you like me? You like Charles better than me, now, don't you?"

Self-affirmation in its crudest form—"swagger ways, thrusting oneself in conspicuous places, talking, acting, dressing to attract notice,"¹ made Albert a most embarrassing companion in public places. I have seen him on the street jostle a total stranger, nudge him and exclaim, "New York's the best place." I have heard him thrust a comment into a conversation between two strangers by yelling across the road, "What did she do that for?" His tutor wrote, some six weeks after he came to us, "His manners in a car are very bad. He jumps about in a restless fashion, calls to me, and on several occasions made remarks across the aisle about some person who entered the car. He has also a very obnoxious habit of making silly, groundless remarks about anything connected with Philadelphia, exalting at every breath New York City. In the train, he 'eyes' in a very annoying fashion any girls or young women who enter."

His attitude toward the wisdom and advice of adults was no less typical. He made dogmatic statements concerning things of which he knew nothing, and assumed an air of sophistication that made him seem most *blasé*. He acted as though he knew more about Latin than any college graduate who ventured to contradict his statement, more about social convention than any of the well-bred people with whom he was living. The writing paper given him was "too cheap," because it could be bought for "ten cents a box," all motors were "tin Lizzies" beside his father's Pierce-Arrow. Though he was constantly asking advice he usually rejected it contemptuously with the crushing remark that "such things were not done in New York."

Yet deeper than this, beneath these annoying self-assertions, there was real pride of honor, a wholesome consciousness of integrity. In the main, by the clean code of a boy, Albert was square. For another reason, too, Albert held his eyes straight. He had not passed through some eight or nine public and private schools without gaining a familiarity with the current vices, but his reaction had been a healthy hatred of all such things. By his straight eyes, Albert won a measure of our respect.

Moreover, as Hall suggests,² all this effrontery, braggadocio, self-righteousness, was often but bravado to hide a deep-seated distrust of self. A recollection of the conversation of the mother on the day she left her boy with us, must give us some hint of how thoroughly,

¹ *Ibid.*, p. 79.

² *Ibid.*, p. 79.

through all his lifetime, the boy's self-confidence had been undermined. His was a sensitive nature in which such attacks had made a deep wound. So, in his "top-lofty superiority" we come to see at least a touch of the "whistle that keeps the spirits up."

Again and again he cried out from the real tragedy of youth, "Do you think I will ever be normal?" And once, in the first months he was with us, before he had quite outgrown the little boy in knickerbockers, he said, "If I can't get so I can manage my father's business I don't ever want to marry anyone. I don't want people to say to my children that their father couldn't make good."

One noticed, quite as much, in Albert's behavior, the characteristic alternations,

4. "Between selfishness and altruism,"¹ generosity and total disregard for the rights and feelings of others;

5. "Between good and bad conduct,"² between submission and rebellion, between dissipation in matching pennies and shooting craps, and renunciation for religious scruples of all athletic games.

6. There are antitheses in the "great groups of social instincts."³ In this particular case the antithesis takes the form, not so much of alternation of contradictory moods, but of a constant complex of conflicting social impulses. In actual contact with strangers, Albert was shy, so shy that on a cross country tramp he was always afraid to ask the road. Yet, at times, his very nervousness made him unspeakably fresh. With boys of his own age he was never companionable; nor did he often seek such companionship. Those who were on a par with him mentally irritated him and he treated them contemptuously, but neither did he have sufficient self-confidence to meet normal boys of his age on equal terms.

Nevertheless, he was in no sense anti-social. He never wanted to be alone. He was anxious to please, affectionate, demonstrative, and had an immense capacity for hero-worship, for devotion to any older person who showed toward him friendliness and interest. This impulse was so strong, so inherent in the nature of the boy, that he poured out his devotion upon such unresponsive objects as his mother and sister. Though Albert never acknowledged their unresponsiveness, it none the less served to dam up these instinctive efferent impulses, till there was within him a great reservoir of adoration, of discipleship, waiting only for an object, an outlet.

In addition to this capacity for hero-worship, we observed in

¹ *Ibid.*, p. 81.

² *Ibid.*, p. 82.

³ *Ibid.*, pp. 84-85.

him a distinct attraction to all pleasing individuals of the opposite sex, irrespective of age, to mother, sister, teachers, little children, waitresses in a restaurant, girls of the neighborhood,—even the snake-charmer at the circus,—an attraction that was open, frank, and entirely immediate.

7. There are “changes from exquisite sensitiveness to imperturbability and even apathy, hard-heartedness, and perhaps cruelty.”¹

Albert very nearly fails to typify this antithesis. Warm-hearted and sympathetic he certainly was; kind to animals, gentle with children, sensitive to the unhappiness of others, impulsively generous. This attitude was a constant quantity in his temperament.

With the muscular power and sharp irritability that was his, it would not have been surprising had his flood of energy occasionally vented itself in cruelty, but kindness and generosity were too inherent in his nature. Though he loved to tease the younger children, to wrestle and toss them about with his powerful arms, he stopped instantly at the first signal of genuine fear or hurt. And though he was self-centered and thoughtless of the rights of others, the moment his eyes were opened to the discomfort or pain he was giving another, he was full of consideration and remorse. Whatever pain he inflicted was but the consequence of his thoughtless egoism. At no time, and in no sense, as long as we knew him, was there apparent any impulse of cruelty, or of conscious intent to wound.

The remaining five antithetical impulses of Hall's series are so much more applicable to individuals who have advanced further in intellectual development than had Albert at the outset of our study that they do not seem *apropos* to this analysis. There are, however, several other typical sets of reactions that we cannot overlook.

Dr. Hall writes that “this period . . . is preëminently the age of sense, and hence prone to sensuousness not only in taste and sex where the danger is greatest, but in the domain of each of the sense species.”² In Albert this adolescent dominance of the senses was reinforced by a redundant physical development and a certain Oriental luxuriance of temperament.

In the pleasures of the palate, he reveled. Quantities of candy were bought and consumed at every opportunity. In the beginning, he ate with his left thumb planted firmly on the table to brace himself for rapid, energetic action. He shovelled immoderate portions of food into his mouth, bolting the meal in one-half the time it took the boy next him, and promptly asking for more. Once, in a restaurant, Albert ordered deviled lobster, lobster salad, chocolate

¹ *Ibid.*, p. 88.

² *Ibid.*, p. 88.

with whipped cream, ice cream, and French pastry. The adult who curtailed this gastronomic dissipation was frankly labelled as a provincial Philadelphian who knew nothing of what was done in the *élite* circles of New York City.

His olfactory sense was sophisticated. His delight was in the perfume of toilet powder, sachet, shaving soap, cologne,—never, I think, in the fragrances of out-of-doors.

In the same manner, his auditory sense responded pleasantly to the stimulus of crude sound. He liked to play rag-time on the Victrola, to sing and whistle it. The sound of words pleased him; he extemporized meaningless rhymes, and snatched at a word in a conversation to quote a phrase from a music hall song in which it was used. Nothing set him off more easily into fits of giggling than a sudden or unusual series of sounds.

Associated with this was his sense of movement, kinæsthesia. Movement, *per se*, was pleasant to him. He loved to leap, run, climb, jig up and down, twirl on one leg of a chair, juggle with plates and phonograph records, and jabber foolishly to release voco-motor impulses. He was “prone to yell and indulge in vocal gymnastics,”¹ and as movement became ordered in a feeling for rhythm, there developed in him a love and an aptitude for dancing.

Vision was no less keenly alive to stimulation. The boy felt quickly and expressed frankly, keen pleasure or displeasure in the color of a gown, the cut of a dress, in a pretty face, or a graceful figure. Peculiarities of gesture and posture he saw instantly and mimicked with glee.

In no department of sense, however, was adolescent sensuousness so imperative in Albert as in that of touch. Touching was well-nigh a mania with the boy. It is a literal fact that, with very few exceptions, he never passed a table, a chair, a person, that he did not touch, or yank, or pat, or pull. He rubbed his knees, pulled at his tie, smoothed his face. Smoothness was an exquisite sensation to him.² He loved to stroke silks and furs, and sulked childishly because, unlike his mother and sister, the teachers would not let him sit on the floor and stroke a silk-stockinged ankle. In a similar way, he had a passion for handshaking, and demanded it on the slightest of pretexts, or on no pretext at all. With Albert, to touch objects, animate or inanimate, was an impulse, a habit, a craving.

And, as final point, to prove Albert true to adolescent type, he washed with his collar on!

Albert was true to another type—to the type of the newly-rich

¹ *Ibid.*, p. 30.

² *Ibid.*, p. 6.

Jew. Money was his standard of value. The possession of money and success in acquiring it were the qualities that commanded his respect. If the color of a dress pleased him he at once assumed that it must have cost "a lot of money." If the waitress in a restaurant were pretty, he expressed a hope that she received a good wage, and wished to leave a preposterous tip. Whoever earned his respect he concluded must have a large bank account stowed away somewhere. It was an axiom that no individual shorn of this bank account could possibly possess such fine qualities of mind and character. Though there might be a few estimable people in the world whose incomes were not yet large, those exceptional individuals were keenly unhappy and were undoubtedly working with might and main to gain a place in the wealthy class. The school must necessarily be a money-making enterprise. No teacher could be conceived of as having any other interest in the work than the salary she received for it. This was his fundamental philosophy of life; the failure that he feared for himself, was a failure in business; and the hero that fired his boyish imagination was his father, the penniless lad of thirteen in the Bowery chophouse, who had built from the nickle he earned, a business spreading over the country, with a central office in lower New York, and a home on upper Fifth Avenue.

All day long Albert talked of money, money, money. A dozen, dozen times he asked the salary of each teacher, the cost of this and that article. He boasted of the cost of his father's motor, of his mother's clothes. He haggled with a peanut-man over the size of the bag he sold for a nickle. He tried to wheedle the tailor into pressing his suit for less than his usual charge. When he was given a pile of letters to mail, he would look rudely at the addresses, asking impertinently, "Has he much money?" or more rarely, "Is she pretty?"

I have described Albert as fully as I am able, and, outside of this "money complex," I have not mentioned a single impulse or reaction that is not included in Dr. Hall's description of the behavior typical of normal adolescence. One had to spend but a single day with Albert, however, to know that if all those typical impulses and all those normal reactions are packed into one boy, and raised to the n th power the product is so abnormal as to drive those who have to live with that boy to the verge of nervous prostration.

No wonder he disorganized his mother's household; he threatened to disorganize ours. That he did not, I count as sure test of its stability. In your attempt to imagine Albert you cannot possibly overdraw the wriggling, impertinent, ill-bred, ill-clothed, unquenchable, "fresh" thing he was. Yet you would miss the picture if you

did not see, too, how much we liked him. Because he was nervous energy spurting out at every time and in every direction, and "freshness" that was absolutely irrepresible, he very nearly drove us crazy; but because he was never mean, because he was generous and warm hearted, because he was straight and square, and because his curly blue-black head was winsome, he won something of affection from us all.

This was the boy that came to us, and these were the impulses ready to respond to whatever stimuli might present themselves in our household.

Perhaps, of all these impulses, the latent reservoir of adoration and discipleship was fraught with greatest potentiality. We glimpsed the force of this very early. Albert's tutor, Mr. A., the first to be drawn to him, showed very genuine kindness and interest in his work with the boy. Albert responded with ardent and immediate hero-worship. He dubbed Mr. A. affectionately, the "professor" and followed him about like a devoted poodle. Mr. A. could go nowhere in the house that Albert did not follow; sit nowhere that Albert was not beside him with his arm across the back of the chair. Even when he went into the city, he was pursued by trivial and facetious notes to the "professor." This way of expressing devotion was so persistent as to be irritating to a busy man, and only added to the nervous strain involved in teaching and disciplining the boy.

For five months, Albert was Mr. A's pupil and disciple. In spite of painstaking teaching, it is not too much to say that Albert did not settle down enough in those five months to learn anything in the classroom. Outside the classroom, however, he gained much. With Mr. A. and the other boys, he "hiked" and wrestled and climbed, shot crows, and played baseball. He lost much of his city flabbiness, both of mind and body. He learned something of the trees and flowers and rocks and came to take sheer boy delight in burrowing under stones for slippery, wriggling newts, which he collected by the dozen and brought home in a pocket handkerchief. Mr. A. gave Albert his first taste of creek and countryside in a way that only an athletic man could. He took him, too, to see a big steel manufactory, the docks along the river front, a hospital in the city, objects chosen definitely to enlarge his experience of some of the practical things of the world. Beyond all this, Albert gained something through mere contact with the man, because for the first time he admired someone whose interest was not in money but in work. This contact did not in the least modify Albert's *nouveau riche* standards, but it opened a corner of his mind to the knowledge that there were other standards.

With the fickleness of youth, Albert ceased to think of his tutor very soon after Mr. A. left us. There was a certain flag, however, drawn upon a blackboard, and a sentence beneath in Mr. A's handwriting. This Albert defended from erasure for many months. In defense of this fetish, the boy expressed in adolescent fashion an unconscious loyalty to the "professor" who had dropped so easily out of the stream of his conscious thought.

At the end of the five months the boy's appearance had changed only in that the plumpness of his body had been somewhat hardened by exercise, and he wore a "first pair of long trousers." These last made Albert look older and served only to exaggerate the silliness of his actions, the vulgarity of his appearance.

(To be continued)

WASTED EFFORT.

BY A. TRAVIS,

Recorder of the Psychological Clinic, University of Pennsylvania.

Standing on the scales at the Psychological Clinic a few months ago, straight and lithe, with her serene gaze on the autumn sky beyond the window, she might have been one of Botticelli's darker angels. The master would have freed her from the dingy white cotton dress, too short for her thirteen years, and draped her in a flowered blue robe to conceal her sturdy legs. With a golden trumpet in her upraised hand he would have painted her above an altar, to praise God everlastingly. She seemed without blemish until she smiled. Then one saw that her teeth were oddly malformed by a congenital disease which had left her beauty otherwise unspoiled.

She bore the name of Italy's queen dowager, Margarita¹, yet when the examiner asked her to write it for him, she shocked his sense of the appropriate by writing *Maggie* in a sprawling hand. Maggie Fresco she is called at school. When the children want to tease her, they call her "cock-eye," because at moments one of her lovely eyes turns inward ever so little. She has been given glasses to relieve the strain on her eye muscles, but false pride, or mere indifference, keeps her from wearing them. She is as large as the average girl of fourteen, by far the largest child in her class, where she seems discouraged by her failure to keep up with girls of her size. She is fond of little children, and finds charming motherly ways of helping them, but they do not like her because they cannot trust her. She is a telltale, and runs to the teacher with every little story.

Although she has improved marvelously in looks, Margarita's mental development has been slight during the four years and a half since she first appeared at the Psychological Clinic in 1912. Then she was shy and apathetic. On the way to the University she hung back and had hardly a word to say to the agent of the Society for Organizing Charity, who was escorting her. In the warmth of the examiner's genial smile she thawed out a little and became more communicative. Eight years and two months old, she tested at a little over five years on the Binet-Simon scale. A month later, when somewhat better acquainted with the Clinic staff, she passed all the six year and one or two of the seven year tests. Her vocabulary in Italian as well as in English was very limited. She had been attending regularly a special class for foreign children, and had not

¹The names are all fictitious, but chosen to give as nearly as possible the same impression as the originals.

learned to read and write. She could add 2 and 2, 3 and 3, and 3 and 2, but there her arithmetic stopped short; 4 and 4 she said made 7. She knew she had five fingers on one hand and five on the other, but said that on both together she had eight. She matched colors but could not name them, even in Italian. When the examiner took up two blocks in his hand, showed them to her for a moment, and closed his hand over them, she could tell there had been two. When he showed her three in the same way, she could not tell how many he had.

At this time it was observed that her appearance was good, considering her physical handicaps. She was a little large for her age, and stood leaning slightly to the left, her left shoulder drooping. Her hair was abundant, long and silky, though far from clean. Then as now her eyes were large, dark, and well set; her nostrils were small and delicately formed; so were her ears and mouth. Even then her clear olive skin and red cheeks were worth noticing, and her nutrition and circulation were good. Among her drawbacks were the malformed teeth and a box-shaped cranium, whose outline was disguised by her hair. Her throat was in bad condition.

The examining psychologist deferred his diagnosis with the expectation that her mental status would improve greatly when some of her physical handicaps were removed. He recommended a nose and throat examination, an eye examination, and a Wassermann test, physical treatment to be followed by six weeks of training in the special class conducted by the Department of Psychology during the summer session.

Through the social service department of the Clinic the coöperation of the public school was secured, and there were interviews with several other social workers and physicians who had exerted themselves in behalf of Margarita's family. With one exception, they all pronounced Signora Fresco lazy, shiftless, and incompetent to look after her children. That one exception was a rather inexperienced young person who thought her an exemplary mother and housewife. The family were living in a wretched tenement, huddled in two small rooms that were dirty and dishevelled. The mother was complaining constantly of her children, and appealing for aid to one charitable agency after another. At one hospital Margarita had been given treatment for chorea and sent to recuperate at a sea-shore home, where she gained ten pounds. The physicians who treated her there apparently did not suspect that she had congenital syphilis.

With the coöperation of the S.O.C., money was raised to pay Margarita's board in West Philadelphia during the six weeks of the

summer session, and the teachers in her public school presented her with an outfit of underclothes. Toward the end of May she was brought again to the Clinic, where a physician in attendance diagnosed adenoids and enlarged tonsils, and took a specimen of blood for a Wassermann test. A week later the Wassermann reaction was reported positive, and she entered the Woman's Hospital for mercurial treatment and removal of tonsils and adenoids. Her eyes were also refracted at this time.

On the first of July, 1912, a much improved Margarita came to live in West Philadelphia. She was still a good deal of a savage, not easy to break in to the ways of a civilized household. Her caretaker reported that she was disobedient and sly, and sometimes made trouble among the other children. After three weeks an eruption was noticed on her body. The physician at the skin dispensary of the University Hospital said that while the breaking out in one or two places might be due to her disease, the real trouble was pediculosis. He prescribed a lotion for her hair, and advised that her clothing be separately boiled before being thrown in with the family wash.

At the end of the summer session Dr. Lightner Witmer held a consultation over Margarita, with the two teachers who had had her in charge for six weeks. Her behavior, they said, was typical of the little guttersnipe that she was. Without being really afraid of anything, she was very self-conscious and shy, but she paid no particular attention to the boys in the class. Of all the children, she was the most troublesome. She could not carry out simple commands, and was always wanting to do something else than the thing she had in hand at the moment. Her analytic concentration and distributive attention were very poor, so was her persistent attention for school work. In teasing she was persistent enough. When she wished to attract the notice of a teacher or classmate, she struck her first and spoke afterward. If the person thus addressed did not turn at once, she thumped her again. Her memory was slightly trainable, but not retentive. Her idea complexes were very deficient. She was careless and unreliable in doing her share of the dish-washing and cleaning up. Music was the only thing she loved. She could not read; could count to ten, but made frequent mistakes in counting objects.

Dr. Witmer's diagnosis, based upon the teachers' reports and upon his own daily observation of the little girl was,—low grade imbecile, an institutional case. Margarita was returned to her family, and an application made out for her admission to a training school for feeble-minded children. Her mother would not consent to let

her go, so that plan had to be postponed, and in the fall she re-entered the special class in the public school. The teacher's report on her work a year and a half later was that she was lazy and phlegmatic, not at all nervous. She worked only when scolded, and when praised she rested on her laurels and did nothing. All of her school work was of poor quality and meagre quantity.

Another year later a social worker who went to visit the family, found the tenement house where they had lived, but they had moved away and no one knew anything about them. Margarita was traced through the school, and finally in October of 1916, as we have seen, she was brought back to the Clinic with her mother by an agent of the S.O.C. She was now under somewhat irregular and intermittent treatment for rheumatism at a hospital in her home neighborhood. Whenever she felt ill, she went to the dispensary and they gave her some medicine. Just then she seemed to be in good health. Her manners were vastly improved, and she gave promise of becoming a very attractive (though feeble-minded and dependent) young woman.

In all the concrete tests Margarita did very well. She did the Witmer formboard in 35 sec.; the Witmer cylinders on the first trial in 225 sec., and on the second trial in 79 sec. with only two false moves. She copied four-block patterns with the design blocks very well indeed, but it must be remembered that she had had practice with these in school. Nevertheless, her performance was equally good with Healy construction puzzles A and B, which she had certainly not seen before. The smaller puzzle she did in 82 sec., and the larger one in 52 sec. In the latter problem her method of solution was particularly good.

Her progress in school subjects in the past six years has been small. She can write her name and the date, and can recognize a few words on a printed page. She does not read in the sense of reading as a means of getting information. Numbers mean little to her. She has not learned how to carry in multiplying, and she cannot even add; $24 + 13$ she put down as $= 107$; $27 + 18 = 18$. She can spell a few short words, like *tree*, *baby*, *hope*, and *three*, but *nest* she spells n-i-s-s-t; *school* is s-h-o-o-l, and she cannot spell *teacher* at all. Her auditory memory span is easily five digits, and she succeeded twice out of five trials in repeating a series of six digits. On the basis of this examination Dr. Francis N. Maxfield confirmed the previous diagnosis, with the observation that she might possibly be classed now as a middle grade imbecile.

Margarita is the eldest child of Signora Fresco by her second marriage. The mother is a character who has interested everybody concerned with the history of Margarita. Born near Naples, the

daughter of a musician, Angela Fresco holds herself a little above the laboring people among whom fate has thrown her. Of her first husband she has nothing to say, beyond the bare mention of his name. When tuberculosis took him and left her a widow with a baby son, she promptly married Feliziano Fresco, a longshoreman, who like herself came from Naples and was alone in the new world with a little boy to look after. This little boy has turned out badly, and been sent to a reformatory. Her own son has developed the disease which killed his father, and is too sickly to hold a steady job or make a good living.

By her second husband Signora Fresco has had five children, all born in America. Margarita, the eldest, we already know. Angelina, the youngest, died of pneumonia. Between them came two boys who are going to school and seem to be getting on well enough, and another child who died of kidney disease. Signora Fresco complains of her delicate health, but one suspects her health is better than she imagines. When she came with Margarita to the Clinic last fall, she had a good color and appeared well nourished and tastefully dressed. Her youthful brightness is amazing to those who remember that she is forty-two, and who know how early these Italian women begin to fade. How has she done it? Not by spending her strength in the care of her home and her babies. She has neglected them as much as she dared, and has leaned heavily on them as they grew big enough to be helpful. Margarita now does all the rough housework under direction, and her usefulness to her lazy mother is making it very difficult to get the parents to consent to place her in an institution, where she could have the training and protection she needs.

Margarita will never be capable of looking after herself, or having a home of her own. It is not certain that all her children would be born feeble-minded, if she happened to marry a man of sound stock, but they would be so badly disciplined and so poorly nourished that they would not have half a chance in the world. At thirteen she is in the third grade with children of eight and nine. Among 1375 girls whom Dr. H. H. Young tested with the Witmer formboard, he found 78 who did it as slowly as Margarita—in 35 sec. or more—but they were all younger, the mode for this time being about six years. At Margarita's age girls do the formboard in from 9 to 29 sec. Her performance in doing the Witmer cylinders in 79 sec. with only two false moves was remarkably good. During the last four years before entering her present grade, she was in a special class and had the devoted attention of one of the best teachers in the city. The effort which has been made to educate her has confirmed the opinion given by Dr. Witmer in 1912, that she is trainable in many sorts of

handwork, but is not educable beyond definite limits which have already been reached.

When she came for her first examination in April, 1912, she had been under the eye of the Society for Organizing Charity for about two years. She was referred to them by a magistrate before whom she appeared as plaintiff when only six years old. The defendant, who was convicted of attacking the child, was said to be a boarder with the family. He was sent to prison for a term of years, and Margarita was placed in the Philadelphia Hospital for treatment. Several physicians who saw her about that time ascribed her dulness and apathy to the effect of shock. It would appear now that from babyhood she had been so dull that she was incapable of being severely shocked, and that this experience had no appreciable effect upon her.

A social worker from the Psychological Clinic visited Margarita's school last November and had a talk with her teacher. She is the largest child in the room, and her desk is entirely too small for her. She sits quietly dreaming most of the time, with her head on her hand. She does best in the simple operations of arithmetic and in geography, where she can commit to memory by many repetitions the brief facts which are sufficient to get her through. It is in spelling and reading that Margarita is weakest—not as one might think, because Italian is her native tongue, but because she makes non-sensical mistakes and cannot see why she is wrong. On the day the social worker visited the class, ten words were dictated as a spelling lesson. They were supposed to have been studied at home. The four most difficult words of the ten, Margarita spelled correctly; five easier words were spelled wrong, and one very easy word was left out completely. The dictated sentence, "We must study our notes," was written by her, "We must hame are noter."

Her young teacher is to be ranked with the few who have been favorably impressed by Margarita's plausible mother. She said Signora Fresco was a fine woman, and did as well as could be expected with the means at her disposal.

In January of this year the same social worker visited Margarita's new home, and found that the girl was in a hospital undergoing treatment for rheumatism. While in the hospital she has good food and care, but when she returns home she quickly falls ill again, because her mother cannot provide the right kind of food and is incompetent to give her the care she requires. The father was temporarily out of work, as there was no ship to be unloaded that week, and the only wage earner for the time being was the consumptive son, aged seventeen, who was working in a tailor shop. He

made five dollars a week, spent \$1.20 a week for carfare and lunch, and gave the rest to his mother. He eats very little, she explained, coughs a great deal and neglects to take his medicine, because, as he says, he doesn't care whether he dies soon or a little later. Though he pretends to have no fear of death, he has so much fear of losing his job that he will not take the doctor's advice to give up his indoor work and try to get something to do out of doors.

The father and the two younger boys were all having bronchitis but were not in bed. Felisiano was out, and the little boys were playing in the kitchen. Signora Fresco herself was under dispensary treatment for various chronic minor ailments. She looked well and strong, but complained of bad headaches, and while talking to the social worker had to pause for breath every few minutes. Her little four-room house is in excellent repair, very clean, and sufficiently furnished. It is above the ordinary for an Italian family of their means and antecedents. The cooking range is exceptionally good, but it would seem that Signora Fresco does not make competent use of her resources for nourishing her family. The chief thing lacking, beside money of course, is a degree of energetic good management on the part of the housewife. The clothing of the family is substantial and of good quality. It is in the vital matter of food that they are poorly cared for.

A few years ago it was somewhat the fashion among social welfare workers to think that if all of a child's physical defects — of eyes, ears, teeth, posture, breathing, and digestion—could be remedied, that child was bound to get on all right in school ever after. Some even went so far as to imagine that a feeble-minded child could be transformed into a normal citizen by removing his physical handicaps. Now we know that with an occasional exception so rare that the rule is all the stronger, once feeble-minded means always feeble-minded. Dr. Witmer defines the feeble-minded as those individuals who cannot maintain themselves in society without supervision, who cannot earn a living, marry, and take care of their families. Margarita could probably become almost self-supporting in an institution, where she could scrub, fold linen, or help the cook prepare vegetables and wash dishes. Surely she would be happier in an institution with companions of her own age and mental calibre, than in a schoolroom where she is conscious of being a misfit, or in a home where she is constantly falling back into a state of ill-health requiring hospital treatment. What is more she needs watching, and her mother has proved incompetent for the task.

Margarita is an impressive type of wasted human material and wasted educational effort as well. There are no less than three

potent factors operating to spoil her life. Any one of the three in itself is almost incurable. Working together they form a vicious circle from which society is helpless to rescue her. First there is the congenital syphilis. Whether or not this is the sole cause of her feeble-mindedness, no one can say. Certainly there are many feeble-minded persons who are not syphilitic, and some congenital syphilitics who are not feeble-minded. We can only say that both grave misfortunes have fallen upon this girl.

In the third place there is her miserable environment, and in that we have to include the depressing influence of the members of her family, as well as the economic stringency, the cramped quarters, bad air, and inadequate food. Even a well-born child might go under in such a setting.

Society may well ask itself, is there no way of saving a child like Margarita, pleasing to look upon, and capable of hard work willingly performed? One can only answer that all the ways have not yet been tried, all the experiments have not yet been made. There is evidence going to show that the history of a child in the first year or two, its nurture and discipline, may determine whether the individual is to be socially competent or incompetent in adult life. In Margarita's case it is too late to experiment further. Experimenting costs much money, and no philanthropist has yet arisen to give a sum of money large enough to make a fair trial over a term of years of the measures which have been proposed. If society really wants to conserve its human resources before they become liabilities, and is not ready to attack the whole problem of poverty, it may begin by taking handsome babies like Margarita out of their unfavorable environment at a very early age, and giving them a hygienic life, with prompt medical treatment, discipline, and wholesome food. Then perhaps we shall not have to maintain so many custodial institutions for wrecks who are past saving.

THE MENTALITY OF SOME FREAKS OF NATURE.

BY GLADYS G. TALLMAN, A.M.,

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Recently there was an opportunity given to test a group of so called "Freaks of Nature." Seven in all, they were tested under the best conditions available. The work had to be done in a large room on two sides of which were caged animals, giraffes, deer, etc. There was no corner where seclusion was possible. Interruptions were frequent and unavoidable. However, as the subjects are quite at ease when observed, they were in all probability not as much disturbed as the examiner. A brief description of the subjects, tests used, and the results follow.

Subject A.

Male—colored—about 60 years of age, shown as a wild man. He was microcephalic, but it was impossible to measure his head as he would not submit to it. Before he would sit down to the test at all, he took the examiner by the hand and led her up to a case where two little chickens were crowded together in one corner. He pointed, said "Chicks?" in a most inquiring tone, and was told "Yes, they are chicks. They want to get out—don't they?" At this instant another Freak came up, whereupon A turned to him and said distinctly, "Say, they want to get out—don't they?" He was then led back to the table and given the Witmer Formboard. This board was used because the forms were of good size for the midgits to handle. A looked at the board and turned his back. He left the table, got a large cigar, lighted it and came back. He took up the circle, tried to force it into all the openings. When it finally fitted into its proper place he was very much excited and began pounding it in further. He tried every block in this manner, often removing one that was correct to try another. At the end of nine minutes and twenty-two seconds he had the circle, square, semi-circle, and rectangle in place. At this time he shoved the board away from him, began puffing at his cigar, got up and walked away.

Subject B.

Born in Sicily—male—23 years of age.

Height about 23 inches. Circumference of head $18\frac{1}{2}$ inches.

B has never been to school; stopped work with a private tutor because "I could not learn good." He reads little, but can write his name fairly well. He has a bright, alert face and is very active. He did the following tests:—Witmer Formboard in 22 seconds,

Knox Imbecile Board in 77.8 seconds and Knox Moron Board in 89.4 seconds. He tried this last a second time and could not succeed in doing it at all. On the Binet test, Goddard revision, B has a mental age of 7.6. His basal age is 6 years. He is unable to copy the diamond, which does not depend on education. His comparisons of butterfly and fly, etc., were very good. He is able to make correct change. He understood the first series of comprehensions but failed utterly on the second series. He resisted the suggestions as to length of lines among the 12 year tests. His definitions were,

Charity—poor people.

Justice—don't know what it is.

Goodness—mild.

Throughout the test B was very much excited, wanted to do well and paid good attention. Twice there were interruptions. At both times B waved a majestic arm at the would-be audience and said in a commanding voice "Now go away, can't you see I am busy?"

Subject C.

Female—colored—age 23 years. Height about 23 inches.

Circumference of head, including a good deal of hair, 20 inches. C cannot read or write beyond her name. She did the Witmer Formboard in 34.6 seconds and refused to try the Knox boards. On the Binet scale her basal age was 7 and her mental age 7.4. Beyond her basal age she gave good comparisons and named the days of the week. Throughout the tests her attitude was decidedly servile, with a forced politeness. She was interested in a passive manner. She showed real interest in the pictures. She became very suspicious when asked to allow her head to be measured—ran away but finally came back and in a very scared way stood quietly to be measured.

Subject D.

Born in France—age 19 years—female. Height 28 inches.

Circumference of head plus hair, twisted in the way, 19 inches.

D has had very little education. Can write name. She performed the Witmer Formboard in 21.4 seconds, Knox Imbecile in 49.8 seconds and the Knox Moron in 29.4 seconds. This last on a second trial she failed to finish. On the Binet scale D measures 8.0, with basal age at 6. Her memory span is normal for a twelve year old child. She did well on the comprehensions. She was unable to copy the diamond. D was very shy at first but overcame it and was most attentive.

Subject E. (Tested by Alice E. Paulsen, A.M.)

Male—18 years old. Excessively fat, weighs over 350 lbs.

Says he finished school. Works in munition factory when not with Freaks. E was tested with the Binet only, taking the test more or less as a joke. His basal age was 8 and he measured 10.0. He failed on all 12 year questions, also on the weight test, visual memory, absurdities, rhymes, and dissected sentences. His free associations or 60 words in 3 minutes were most suggestive. He started and named all the places where he had been on exhibition, then he began naming foods, such as "sugar, lard, butter, salt, mustard, etc." His definition of "justice" gave the same idea, *i. e.* "done justice to a meal, you get enough to eat, there is plenty there for you." E "would do more tests to oblige" the examiner, but "really, would rather not do them."

Subject F. (Tested by Alice E Paulsen, A.M.)

Female—adult—over 50 years—colored. Height 7 feet 6 inches.

She tested above the Binet but failed to copy designs and compose sentences using three words. Gave but 48 words in 3 minutes. "She was slow and shiftless in her responses. Comprehension and judgment were normal but ingenuity was rather subnormal."

Subject G.

Adult—male. Height 8 feet 2 inches (exhibition height).

G is a vaudeville actor. He writes allegorical plays, words and music; is above the average adult along these lines. His features suggest acromegaly, but G says this is a disputed question for several physicians. He was tested on the Woodworth directions tests and cancellation A test. His reaction times are as follows:—

Cancellation A..... 2 min. 46.2 sec. with no errors.

Easy Directions..... 1 " 55.2 " " 4 "

Hard " 3 " 10 " " 5 "

All these are rather slow, but there is some doubt as to whether they should be recorded at all as the man was just recovering from an attack of pleurisy and was so weak that perspiration stood out on his forehead as he worked. However, as he was most anxious to be tested the records stand. If G is acromegalic there is a good possibility that the disease would account for some slowness.

In summing up the subjects tested, A is undoubtedly a microcephalic idiot; B, C and D are to be estimated as middle grade imbeciles; whether they are cases of Endemic Cretinism or Infantilism cannot be stated, as physical examinations were impossible. E in all probability is a moron. F is about normal but shiftless. G is undoubtedly of normal mentality. Taken from an economic view point they are all earning more than the normal adult could earn with the same amount of education. The largest amount earned by any one of these seven is \$125.00 a week.

CLINIC REPORTS.

XVI.

Elisabeth was nine years and nine months old when she was brought to the Clinic on April 23, 1917, by her sister, aged twenty-one. They desired a mental diagnosis prior to her admission to a girls' school. Two other sisters had been brought previously for the same reason and diagnosed as normal.

Elisabeth was a bright-eyed, nervous, thin little thing, under-weight and microcephalic. She was neat and clean, but did not look well nourished. Her height was 124.5 cm., between the minimum and mean for 9 yrs. Her weight was 22.1 kg., mean for 8 yrs.; below minimum for 9 yrs. The head girth was 49.2 cm.; the minimum for 5 yrs. is 49.31, for 9 yrs. 51.03.

The formboard revealed weakness in coördination, and more especially in distribution of attention, but this weakness was not of such a degree as to prevent her from giving a performance entirely normal in time and quality.

With the Witmer cylinders she gave a very good performance; in quality distinctly normal. Persistence of attention was good.

At first she thought the Healy puzzle A hard and pouted over it, but stuck to it and inside of one minute had worked it out intelligently. The two following trials it presented no problem to her at all. She constructed it instantly.

In copying patterns with the design blocks she was very slow because she tried to copy the edges as well as top. When she was told not to do this she put them together block by block, consulting copy each time. Analytic attention was good. Elisabeth showed some constructive imagination in that she composed for herself a rather pretty design with the blocks.

Her performance with the Healy completion test clearly showed good imagination and very poor distribution of attention. She put the blocks in quickly, about half of them wrong, then looked the board over and corrected all of them. She gave adequate reasons for placing all ten blocks, such as "It's a block of wood. It's just dropped off from where he is sawing." Her memory span for digits was 5 forward and 3 backward.

Binet-Simon Tests, Stanford Revision, showed her mental age to be 8 yrs. 9 mos., I. A., 897.

Her imagery was particularly good. She reproduced Binet designs with ease, and not only described but interpreted pictures. In looking at pictures her observation based on analytic attention was *excellent*. On the Binet Scale, her mental retardation is measured by one year.

She reads in Second Reader fairly rapidly but inaccurately. Frequently miscalls words, substituting another that *looks* something like it.

Her efficiency in arithmetical reasoning is adequate, but she is distinctly below par in handling numbers. In the same way, her ability to learn to read is distinctly above her specific efficiency in spelling and recognizing words.

Elisabeth appears, according to report, to have been absent from school as much or more than she has attended. She says she does not like it, that the teacher gives her spelling words and numbers that are "too hard for her."

She plays normally. She mentioned and gave a clear description of five or six of the games children of her age play such as "In and out the Valley," "Tap on the Back," etc.

Elisabeth presents a very clear picture of a child of normal mentality, retarded two or three years in school work, and approximately one year on the

mental age scale, whose retardation can be remedied without individual instruction. She should be put somewhere where she will be properly nourished and compelled to go to school, assigned to a grade where the work is not "too hard" for her, probably 1 B. Under such circumstances she ought to progress rapidly toward normal efficiency. Eye and ear examinations were recommended, as possible factors in her poor distribution of attention may be imperfect sight and hearing.

SARAH W. PARKER, A.M.
Graduate Student.

XVII.

During the spring of 1912, Gabriel and his two brothers were brought to the clinic by a representative of the S. O. C. because of backwardness. The diagnoses were deferred on the cases of Gabriel, then ten years of age, and the youngest boy, then four; while the second brother was found to be a low grade imbecile (Barr classification) and was recommended for Spring City, to which he gained admission, and there he still remains. The youngest brother has since died.

Gabriel was returned to the clinic today at the request of the Social Service Department in order that his progress might be noted and a definite diagnosis made.

When examined in 1912, the mental age by the Binet scale was found to be nine years. Today the Terman Revision gives a grading of ten years and five months, all the ninth year tests being passed, three of the tenth year and two of the twelfth year. This gives an intelligence quotient of .66. He gave a satisfactory performance on the cylinder test and did the Healy puzzle boards and all the designs that were given him with the design blocks. But in the work with these last tests, he was slow in making corrections and adjustments, proceeded largely by trial and error and repeated his errors. After having tried for a long time to make an evidently impossible placement with one of the Healy puzzles, on the second trial he made two distinct attempts to make this same placement. He has a memory span for five digits. A lack of language ability may have been responsible for a number of failures in the Binet series but only the intellectual deficiency could account for the type of performance in these other tests.

Gabriel is an Italian boy who will soon be sixteen years of age, a little under size for his age yet probably normal for his nationality. He is a very quiet boy, lacking in energy and initiative, who gets along well with the other children. He makes a very favorable impression because of his neat appearance and his deferential and frank attitude in conversation. He does not find it easy to understand questions despite his long school training but this may be attributed to the use of Italian in the home.

He lives with the sister of his mother, whose husband is earning a good wage; and as he is the only child in the home he has very good care and treatment. It is not usual in the foreign quarters to find relatives trying to put a boy back in school when he is almost at the age where he could obtain his working papers.

The father died eight years ago, as the result of an assault one night while returning from work. He was a strong, healthy man, a laborer, of good habits so far as we can ascertain. The evidence we have from the first visit by the mother five years ago, indicates that she may be of low mentality. She did

not know how long she had been in the country, nor how old she was, and could not speak English. Two years ago she left her son and is now living with a man not her husband. Two children died shortly after birth, the death of one being attributed to a fall of the mother during pregnancy.

Gabriel started to school at the age of six, and has attended quite regularly up to his dismissal three weeks ago. This was because a tubercular condition was suspected and his presence was considered dangerous to the other children in the class. He will be admitted to an open air class that is soon to be started in his neighborhood. He was recently promoted to the fifth A grade, not because of capability, but in order that he might not be discouraged, for he was making an effort to progress. He is said at the school to do fourth grade work, but our examination does not indicate that he can do satisfactory work of a grade higher than the third. We are unable to determine the lengths of time he has spent in the intervening grades.

The diagnosis is high grade imbecility, according to the Barr classification. The lack of development during the past five years may have been largely due to the physical condition but the retardation is now too great to expect that he can ever attain a normal mental level.

Owing to the possession of favorable characteristics, perseverance and sincerity, he should make a good workman at tasks not requiring much mental activity.

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Harrison Fellow in Psychology.

XVIII.

A pale-faced boy, with eyes that gave evidence of double vision, was brought to the Clinic by his mother upon the recommendation of the Social Service Department of the University Hospital because of failure to progress in school. He was below the normal for boys of his age in both height and weight, and was decidedly microcephalous.

Job's mother said that he had not been like the other children since his birth, when she thought that he was injured. She was twenty-five years old when he was born and was suffering from hay fever and asthma. She was also worried and not well nourished because his father was drinking more than at any other time before or since. About three weeks before the full term of gestation she fell and brought on premature birth. She had no physician and the birth was a dry one with long, hard labor. The child had to be turned and was partially asphyxiated. His eyes were suppurated and there was also slight rupture of the navel. The woman who was caring for her did not know what to do for the little five pound baby, who moaned all night although they tried to make him comfortable with hot water bottles.

The mother partially nursed him but was unable to care for him herself, and the fourteen year old girl, whom she employed, did not properly feed him and dropped him two or three times. Job was not troublesome but held his head down and did not seem to notice things. He walked at fourteen months and talked at thirty months. He can now dress himself, and generally uses a spoon, although he can use a fork but not a knife. He has an enormous appetite.

He began school between six and seven years of age and at nine years of age he was still in the 1 A Grade when he was excluded because he could not learn. His conduct was fair and he was seldom absent. He allows other children to impose upon him but gets along well with them.

His nose and throat seem to be in good condition and he has had no

operations. His only diseases have been whooping cough, measles and scarlet fever. About a year ago he began to have attacks at irregular intervals of two or three days in which he fell, grasping at any object near by and twitching all over. The attack lasts for only two or three minutes when he jumps up as though nothing had happened and appears brighter than before.

While waiting for his mental examination, Job was playing with the peg board and he was allowed to finish it. He did not know the colors by name, and at times he made a mistake in matching blue and green. He showed some planfulness in putting away the pegs but he missed two or three without noticing it. The quality of the performance might have been due to defective vision.

The formboard, however, revealed the true situation, which was later corroborated by the intelligence quotient. He showed no understanding of the test, placing each block above a recess and only one happened to be over its own recess. At the end of eighty-six seconds he was apparently satisfied with the performance. The blocks were replaced but no instruction was given. In the second trial he placed the square by chance in the right recess and he succeeded in getting seven into the right places but was as satisfied as ever with the others when they were on top of the holes. The third time he took longer than in the other trials and had only three right. He was then given the simpler formboards containing three figures each. He succeeded with the circles and the simpler figures but with the circle-star-cross he interchanged the star and cross. He was then given the lower row of the formboard which he did correctly after some trouble with the star. After placing successfully two rows he tried the whole board. He would take one space at a time and look for the block, showing no distribution of attention. His visual sensitivity and analytical attention were also very poor. The performance suggested that double vision might be responsible for some of his failures. Each eye in turn was covered and he was given the test, but the performance was qualitatively the same except that it showed the effect of practice, indicating that the boy was, to a small extent, trainable.

Tested by the Stanford Revision of the Binet-Simon Scale, Job passed only four of the three year old, two of the four and five year old, and but one of the six year old tests, giving a score of 3 years 6 months. He could not count beyond two, and after four or five trials he still repeated each digit as it was given when an attempt was made to find his memory span.

Thus the performance of the formboard, which was that of a three year old child, exactly corresponded to the mental age and would have been sufficient for the diagnosis,—feble-minded not higher than low grade imbecile, Barr's classification; an uneducable and only partially trainable case.

When custodial care in an institution for feeble-minded children was recommended, the mother said for the first time that an application made to Elwyn at the suggestion of the school physician, had been refused, and through the Board of Education an application was now on file at Spring City.

ANNA B. PRATT, A.M.,
Graduate Student.

REVIEWS AND CRITICISM.

Testing Juvenile Mentality. By Norbert J. Melville. Philadelphia: J. B. Lippincott Co., 1917. Pp. xi+142.

The broad, general title of this book is misleading. It is a manual of directions for giving the Binet tests according to the 1911 revision. In his introduction to the book Dr. William Healy says, "For final diagnosis of the mentality of the individual, the Binet test score is simply one out of several main facts to be taken into consideration. Not even all mental abilities are represented in this system, to say nothing of their not being thoroughly tested at each age level, and many items of the physical background inevitably form part of the problem." The author recognizes this fact when he refers to the use of the scale as a "first aid." But other parts of the work are not consistent with this view. For instance: "Those who have been doing most work with such apparatus, as for example Drs. Healy, Witmer and others, are using it in supplementing the Binet-Simon scale (1911) as valid for subjects "up to ten years or so of age." These workers would hardly agree that their work is the development of supplementary scales.

The first part of the book contains abridged quotations from the published reports of Binet and Simon on "The Problem of Clinical Interpretation." One striking statement is this: "The lack of attention, of character, of will, do not appear or scarcely so, in our tests of intelligence. In fact, in our examinations we have not found an inattentive child except among those of three or four years." Again: "We have endeavored to perfect the procedure in the direct examination of the mental functions. For that purpose we make use of the new method, that of taking the level." But: "The results of our examination have no value if deprived of all comment; they need to be interpreted."

The whole problem of the place of the Binet scale in clinical diagnosis is opened up by these quotations. What is it that is to be interpreted? The final score? If not it must be the results of the individual tests. How can one interpret these unless he has seen the performance? If attention and the other capabilities that go to make up "mentality" are not shown, what is there to interpret? "The voice is Jacob's voice but the hands are the hands of Esau."

If another manual for giving the 1911 series of tests is needed, this one should fill the place. It is intended for workers in the Philadelphia schools and will probably find its chief use there. The 1911 revision is not the one most widely used by Binet workers, and that fact limits the field for a manual. It is another "uniform" and "standard" method.

The method is excellent. The directions are simple and clear. A new feature is the arrangement of the tests in series. "Tests which the majority of investigations thus far reported," he says, "have shown to be most highly diagnostic in differentiating the mentally deficient from the normal, constitute the first or *a* series; those next in diagnostic value constitute the *b* series, etc. . . . Those tests which involve the use of similar materials or methods are arranged in the same series so that they will be given in sequence." In the directions in regard to test order, Mr. Melville has his examiners begin with the pictures, then give the *a* tests of the year just above that indicated by the results of the picture test, then proceed with the *a* tests in succession. This method is of great value in saving time and orienting the examiner with regard to the limitations of his subject. After the *a* tests are completed, the *b* tests are taken up in the same way, then the *c*, *d*, and *e* series in order.

One of the merits claimed for the Binet scale is that it can be applied in a

very short time. Unless some definite procedure like Mr. Melville's is followed, examiners usually find that it takes too long. If the sitting is not to occupy more than half an hour, some such time-saving device is necessary. The arrangement of tests in part II is very cleverly planned for the convenience of the examiner and the best presentation to the subject. The directions are printed on one page; the pictures or drawings are printed on the page opposite, so that the former can be turned in position for the examiner to read, while the subject is looking at the latter.

The score sheet may be kept out of the subject's sight behind the book, eliminating the possible disturbance of the marking of the paper. The directions for scoring are very explicit. The attempt to reduce to a uniform standard the method of giving and scoring the tests, is highly commendable. It is doubtful if the personal equation can be eliminated and examiners be found who will score uniformly. Anyone who has had experience in training people to give and score the Binet tests, will realize that this is well nigh impossible. The practical outcome for clinical method, of a general, uniform procedure, is the securing of results that are comparable, and if Mr. Melville's book accomplishes this, it is a very useful and valuable contribution.

H. J. H.

NEWS AND COMMENT.

Birth Registration.

Never in the history of this country has the question: "How old are you?" been of such vital interest to so many people as it was on registration day, June 5, 1917. Never before has the United States Government been so deeply interested in knowing the exact ages of the young men of the land. Never before has the public mind been so ready to grasp the importance of complete birth registration.

The statements that birth records are needed to prove men of voting age, to establish old age pensions and pensions for the children of soldiers, to establish rights of inheritance, to determine how efficiently the states are protecting the health of the children, and to determine who is entitled to the protection of the flag—these statements are too apt to be treated as old truths which call for no immediate action.

Although in ordinary times the problems of civilization are settled slowly, it is not so in time of war or after great catastrophies. Then the emergency or bitter experience brings quick results. The city devastated by fire is so rebuilt as to guard against a second conflagration. And today, this war call for the registration of young men brings home the need of birth records to every community and to almost every family in the United States.

It is hoped that the call for the registration of all men between the ages of 21 and 31 will awaken the people from their lethargy and lead at once to this forward step in our civilization—the *registration of every birth*.

If you are interested and wish to know how to obtain better birth registration in your state write to the United States Census Bureau.

A Correction.

EDITOR PSYCHOLOGICAL CLINIC,

Dear Sir:—In the article, "A Study of Individual Tests in the Binet-Simon Scale," May, 1917, in the fourth column of the figures on page 80, the final per cent should be 35.0 instead of 21.5.

J. E. WALLACE WALLIN.

The Psychological Clinic

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VOL. XI, No. 5

OCTOBER 15, 1917

ORTHOGENIC CASES.

XII. A STUDY OF THE INTERPLAY OF PERSONALITY.

BY SARAH WARFIELD PARKER, A.M.,
Philadelphia, Pa.

(Continued.)

It was thus that Mrs. G. saw Albert when she stepped into our living room for the first time, early one June afternoon.

Two steps led down from the wide doorway, through from the hall into the long room. Mrs. G. stood—I should say loomed—in the open doorway at the top of the two steps. She was big,—a woman of tremendous physique, a Viking woman. Indeed, at times, she called herself a Scandinavian, though most probably she was either a Russian or a Finn. A northern or eastern European she most certainly was—Teuton, Scandinavian, or Slav—and four years on this side of the Atlantic had left her still very foreign.

She gave, standing there a little above him, an extraordinary impression of poise, maturity, dominance. Yet she was still young—not more than thirty-five. In spite of her size there was grace in the movement and shape of her hand and arm. Her skin was very white, not pale, but as the mediæval romancers said, milk white; her lips, very red, and her eyes, clear blue. Her brown hair, coarse and stiff from the curling iron, was not pretty, yet somehow its very dullness blended into the general color of her. She was, moreover, well-groomed, expensively groomed, with excessive care for detail, for finish.

As she looked down on Albert, fidgeting in his tight, ill-cut clothes, it was her face that eluded one. It was a face set in hard lines of sheer force, yet one caught in it, too, a strange, alien quality of feminine charm.

It was the force, however, and not the charm that Albert saw that afternoon. The silly giggle died on his lips; he turned hastily, and went out by the screen door, slamming it behind him.

At last Albert was face to face with a personality stronger than his irrepressible freshness, stronger than his metropolitan conceit, stronger than his ultra-adolescent energy. Mrs. G. was a woman of dynamic will—a will of immense energy to attempt the impossible, of extraordinary power to dominate the mind and behavior of those with whom she lived.

Culture—particularly that degree and quality of culture which makes for social poise—was Mrs. G.'s criterion of values. In her heart of hearts, she despised all Jews, looked more or less superciliously on all Americans, swept disdainfully from her notice all who dressed, spoke, or acted commonly, cheaply—unless, indeed, one of these was in distress. Then a generous nature leaped impulsively to put all her energy, skill, time, and money at the service of the unfortunate.

Albert was a Jew and an American, common in dress, speech, and manner. Therefore, she despised him. At the same time, he was so incredibly the antithesis of all her standards that he challenged the fighting quality in her. Consequently, it was not many hours after she first looked down on him in the living room, that Mrs. G.'s dynamic will was set to tame Albert, to transform him. She set herself to train out of him all the inbred habits and impulses she scorned, to develop in him the feelings and manners which she appraised as of social worth. It was a task worthy of her strength—this task of stamping out all that he was, of making him all that he was not.

Her attack was as vigorous as it was immediate. The initial attack gained impetus, too, by the fact that, in the beginning, all their impulses seemed so antithetical.

Albert, by choice, was never clean. Mrs. G. had a passion for cleanliness. Before breakfast on the first morning, she felt of Albert's washcloth, towel, and tooth-brush, and found all three dry. A very grumbling, rebellious boy was called upstairs to strip, wash, and dress over again. Every morning thereafter, Albert was required to stay in the bath-room twenty minutes by the tiny clock in the leather case on Mrs. G.'s dressing table. In sheer desperation, he washed to kill time. Every afternoon at 5:30 he was required to take a hot bath. All this was contrary to the instincts and desires of most adolescent boys, and particularly contrary to the instincts and desires of Albert. Never on a single day was he allowed to miss his bath, or to curtail his morning ablutions. An iron hand was over him, a hand that against his instincts, against his will, was changing him from a general dinginess into a shining cleanness.

Albert ate with unmannerly eagerness, talked too gluttonously

of food, and made rude comments about it at table. Though Mrs. G. shared his passion for the rich things of the table, and often expressed it frankly with a sibilant, "Dees ees good," she despised the vulgar conspicuousness of this trait in Albert. Most of all she hated the unbecoming plumpness consequent on his tendency to overeat. By the end of the first week, he was put on a single ration at dinner, and a diet of cereal, milk, and fruit for supper. In spite of himself, he was made to live on simple fare. He soon learned what to expect at table and invariably anticipated Mrs. G.'s refusal of a second portion by a quick negative to his own request, "May I have another butter ball? No!"

The manner of Albert's eating, too, was changed by tireless supervision of detail. He was required to eat slowly, indifferently. to turn the blade of his knife inward as he placed it on his plate, to use no knife with fish, to observe every detail of table etiquette—etiquette all too foreign, sometimes, for an American table. Nothing escaped Mrs. G.'s alert eye. Once she saw him toying with a potato on his plate. She exclaimed in broken, staccato English, "Stop turning him. He will be dizzy."

Albert boasted of his superiority over the younger children, and with a toplofty air, assumed unwarranted equality with the adults in the house. Yet he spent the hour after the younger ones had gone to bed, like an impertinent little boy, in annoying the older people in the family. Mrs. G. had not been in the house many nights before Albert was "taken down from his high horse." For one week he was sent to bed with the children at eight o'clock, and found that he was not too old to be punished for impertinence by an occasional afternoon in bed.

Albert was careless of his appearance. Mrs. G., though she indulged herself at home when there was no company, was scrupulously careful in her attire outside the house. She tolerated no imperfections. The adjustment of her veil could not be compassed in less than fifteen minutes. If the dressmaker erred a sixteenth of an inch in the width of a tuck, the gown must be remade. Immediately, she turned upon Albert all this elaborate attention to detail that she showed in her own costume. Shirts, socks, collars, ties from home she threw aside as "common"—her first blow at Albert's blustering confidence in the superior taste of all New Yorkers, and of his family in particular—and did not stint the time she spent at the men's furnishing counter selecting the exact cut of shirt, the exact line of collar, the exact color of tie and sock that would most modify the boy's crude, fat appearance. She replaced with a decent soft hat the ridiculous brown derby which had given the final touch

of the ludicrous to Albert's appearance. She saw that his suits were pressed at least fortnightly, that he shaved daily; she taught him to shine his shoes, to tie his tie in a precise knot, to leave the top button of his coat unfastened. She made the barber cut out great quantities of his stiff, black hair, supervised the entire hair cut, and subsequently sent him upstairs a dozen times a day to smooth with brilliantine the rebellious mop until at last it was changed to a glossy sleekness.

Albert was further trained into shape by exercise. He rode madly up and down hills on a rickety bicycle—rickety, because no bicycle could possibly stand more than two weeks of the kind of wear Albert gave it. He rode horseback, too, and as the summer wore on, came to look very trim and handsome in his riding clothes.

He not only exercised; he worked. Albert hated physical work, and he had a boastful conviction that, as a rich man's son, he was above it. He was, however, in the grip of something stronger than his own will. Mrs. G. was determined to combat his physical laziness, to break his cocksure confidence that his father's money brought him immunity from labor and from coercion. He muttered sullenly, "I'm not a wop. My father didn't send me here to be a gardener." But in spite of his mutterings, he had to plow and dig, and weed in the garden; he had to mow and rake the lawn. The louder he protested, the more menial were the tasks assigned to him. He had to sweep the porches, to feed and water the horses on the coachman's day off—and as final indignity—to black Mrs. G.'s shoes. "If my father knew I was made to be a bootblack and a stableman he would take me away from here," Albert grumbled, "He didn't send me here to be anyone's servant. He wouldn't stand for it." As sole answer to his grumblings, he was given more horses to water, more shoes to black.

In those months, Albert hated Mrs. G. and all the things she made him do. He was fifteen and strong as an ox, and by nature, rebellious and irrepressible. He was old enough and strong enough to rebel effectively; he had mentality enough, and occasionally money enough to take "French leave" for New York. Only Mrs. G.'s tremendous will held him—a will with amazing power to dominate and to compel. With a black look, Albert called Mrs. G., "That Swede," but he obeyed her. For the first time in his life he obeyed blindly and unconditionally. A single incident will illustrate the completeness of his submission.

One hot afternoon in August, Albert had been sent to rake leaves from the shrubbery over the edge of the hill above the creek. Presently, he came into the cool of the living room, mopping his face.

"I can't rake down there any more, Mrs. G. There's a yellow jackets' nest there."

Mrs. G., unfamiliar with English, thought that "yellow jackets" were "little yellow birds." She pointed to the door with a long arm and compelling finger, and her answer was a single guttural monosyllable:

"R-r-r-r-rake!"

Albert raked. After a little, he returned to receive precisely the same answer:

"R-r-r-r-rake!"

A third time he came back and still Mrs. G. had for him but one word: "R-r-r-rake!"

And Albert raked!

There was a magnificent thoroughness in Albert's subjugation, that, in spite of his resentment, bred in him a respect for the force that had so mastered him.

Inside the class room as well as outside Albert was subjected to a new regime of vigorous discipline. During the first few days in June, Dr. Witmer himself worked with him. For once in his life the nervous wriggling boy did not move a finger. For the first time, he sat at his desk absolutely quiet.

Dr. Witmer, from his examination, concluded that Albert had been pushed too far ahead in geography, history, and arithmetic. Because of the picture of mental confusion which he presented and the conspicuous defect in persistent concentration of attention, Dr. Witmer decided that some weeks of mental discipline must precede any attempt to give Albert additional information. Thoroughness and precision were the qualities which must be developed in him by the summer's work. Albert had, as Dr. Witmer remarked, a mind that "skims". He must be given tasks that required exactness and completeness—tasks through which he could not skim. Above everything else, there was to be no "speeding up," no attempt to cover ground. Every single point must be known exactly and thoroughly. The teacher's motto, like General Grant's, must be, "I'll fight it out on this line if it takes all summer."

Dr. Witmer's outline for Albert's work in the next few months, therefore, included:

(1) The memorizing with absolute accuracy of the definitions in Webster's Abridged Dictionary, of words taken from Rice's Rational Spelling Book—Fourth Year—a very few words each day.

(2) The memorizing, word for word, of the illustrative sentences in Rice's Speller containing the words studied.

(3) The composition of original sentences containing the words studied.

(4) Drill in penmanship in which precision must be rigidly insisted upon.

(5) Simple stories like those in Aesop's Fables and Baldwin's "Fifty Famous Stories," read and reread until every word and every sentence was read with absolute accuracy.

(6) Oral and written reproduction of each story until he could reproduce the content of what he had read in a logical and comprehensive manner.

(7) The writing of solutions of simple arithmetic problems, to exercise his reasoning faculty within the limits of his very elementary comprehension.

With this outline for work, Dr. Witmer handed Albert over to a vigorous young woman whose discipline was more adequate to the situation than that of the man who had first taught him. Dr. Witmer, too, continued his close supervision of the work throughout the summer and from time to time took over the actual teaching for one or two hours a day.

Miss B. carried out the prescribed program energetically and faithfully. She made Albert work in the class room, and what is more remarkable, she made him work by himself outside the class room, an hour and a half in the afternoon, and sometimes an hour in the evening. To accomplish this, she had, at first, literally to follow him around with his work and force him to it. "There is nothing in the world," she wrote, "that he minds more than to have to sit down and learn a thing alone."

The work in memorizing was assigned to Albert for two reasons. In the first place, because of his defect in persistent concentration, he was unable to attend effectively to any material presented to him for learning. The completeness and accuracy of reproduction required in this task made it of disciplinary value in developing control of attention. This assignment was of immediate value, moreover, as a test of Albert's capacity to respond to the attempt to teach. Though his receptive capacity for unit images was adequate and his retention of images or image complexes, once apprehended, was fairly good, his capacity for the organization of images into the complexes essential to understanding and to the learning process was so deficient as to constitute a positive defect in the trainability of memory. At first Albert was given new material to memorize as a means of finding out whether or not he could learn anything. The work in memorizing was continued because of its

disciplinary value in training the attention and in exercising his meager mental capacity for the organization of images.

Each day Miss B. gave Albert eight definitions to learn. Any that he did not know he had to write ten times after dinner. This penalty was invariable and inescapable. During the first week or so, an hour or two after dinner went in the tiresome task of writing and rewriting definitions. This work began on the first day of June. It was the twenty-first day of July before Albert was able to recite correctly in the morning recitation the eight definitions assigned for the day.

It took him hours a day of hard study for at least a week to learn a simple paragraph of 63 words from the Fourth Year of Rice's Speller—this in spite of the fact that he had a memory span of eight digits. Memorizing of words linked in a thought sequence, no matter how simple, was extraordinarily difficult for Albert. This buckling down to a mental stint, this holding of his attention upon a job was intolerable to the boy with his nervous flighty habits of mind and body. Nevertheless, the results indicated that with sufficient coercion and repetition, Albert could learn something.

The immobility of Albert's mind was apparent in his diction, and in the structure of his sentences. On June 3d five out of the eleven sentences Albert wrote containing the words studied were incorrect, and June 4th, six out of twelve. The following random selections show characteristically how Albert handled the English language. They show his carelessness in misspelling familiar words, his crudeness in the use of prepositions, his incomplete comprehension of words and their usage, as well as his ability to compose some perfectly correct sentences. Here and there, too, they contain a comment on his environment, or a lapse into his boyish impulse to make puns.

I shall by the pad and pencils at the stationery store.

The captain was the last person to descend the ship.

A telescope is used to see distant objects.

Mrs. G. is very particular.

I returned back to Philadelphia.

His conduct is very fashionable.

That women does nothing but grieve.

I know a teacher that is very stern.

I have two heads, my fore-head and my own head.

Most girls powder their noses to look pretty.

Those people have been weeping of the loss of their son.

The company are having a dialogue.

The girl made a nice preface.

Do you like veil?

Dr. W. always likes to make facts plain.
Try to perceive around the house.
The butler has to wait upon at table.
I heard that he told a fine speech.
All baby's must shed tears.

By July 16th, he had so far improved that he made only two errors in writing twenty-seven sentences. Much of the success of this performance was certainly due to a gain in attention to the actual setting of the sentences down on paper; some of it, no doubt, to an understanding of the usage of the fourth grade words, that had been drilled into him, and possibly a minute residuum to the increasing adequacy of his image complexes.

To training in penmanship Albert responded more readily than to anything else. It appealed to him as sport, a race in which the goal was to overtake his teacher and equal the perfection and precision of the copy she wrote for him. With eye and hand and mind and interest all occupied upon a single task, his attention during drill in penmanship was more persistently concentrated than during any other period of the day. He followed each line with the minutest care. The specimens opposite show with what results he was rewarded.

Specimens one and four, entirely comparable in that they represent handwriting in the first draft of composition work, show clearly what a remarkable change three months of Miss B.'s teaching produced in his handwriting.

The results of this training were evident not only in his specific efficiency in handwriting, but in a general gain in precision of movement and manipulation. His practice in penmanship, Miss B.'s disciplinary teaching in the class room, and Mrs. G.'s discipline in the house, all united to produce in Albert a perceptible gain in neatness, in ability to arrange his own clothes, and to put a desk in order with some approximation to the mathematical exactness of position that Mrs. G. maintained for every article in the house.

Thus, drill in penmanship developed in Albert a certain precision of movement. Drill in memorizing definitions and paragraphs developed, far more slowly, some persistence of attention to verbal stimuli, and accuracy in reproduction of the verbal images thus established. The study of definitions, combined with the composition of sentences, developed precision in the comprehension of the meaning of words, and in their use as symbols of expression.

The work in reading and in oral and written reproduction of stories aimed further to develop precision in attending to, imaging, organizing, and reproducing somewhat more complex material. In

I was very sorry to hear that
both my father and sister were
going to Europe, but since I knew
the trip would do them good I did
not care so much. They are going

1. FROM A DIARY WRITTEN JUNE 18, 1914.

When duty calls, obey.
When duty calls, obey.

2. FROM A PAGE IN COPY BOOK WRITTEN JULY 7, 1914.

Rome is on the Tiber
Rome is on the Tiber
Rome is on the Tiber

3. FROM A PAGE IN COPY BOOK WRITTEN SEPT. 17, 1914

As they walked through the
woods with their bows and
arrows, there was a lot of
shouting and laughter. They

4. FROM A COMPOSITION WRITTEN IN SEPT., 1914.

the beginning he could not understand the proverbs such as "All is not gold that glitters" written in his copy book, nor the fables of the "Fox and the Crow," and the "Dog and the Meat" until they had been explained to him again and again. Before he settled down to reproduce even the simplest story, he pursued his teacher all over the house with questions that showed he did not comprehend the story, even though she had read it to him several times and explained the more difficult points. No wonder he had not progressed in history and geography. He could not learn because he did not understand a single paragraph that he read. After a fable had been explained and re-explained, after he had told it and retold it orally, after he had written it and rewritten it, Albert at length understood it. During the summer he gained very little in this capacity to understand and reproduce. He required less explanation and on the second or third rewriting could reproduce coherently a story such as that of "William Tell," or "Bruce and the Spider"—stories which second and third grade children appear to understand without difficulty.

Finally, the aim in teaching Albert to write out simple arithmetical solutions was to develop some precision in reasoning,—that is, in the purposeful organization of images.

For the first two weeks he wrote dozens of simple one step multiplication solutions like the following:

If in one hour a boy can ride 10 miles,
in 16 hours he can ride 16×10 miles = 160 miles.

In the third week he passed to two-step solutions.

If in one hour a man earns 20 cents,
in 9 hours he will earn 9×20 cents = \$1.80.

If in one day a man earns \$1.80,
in 30 days he will earn $30 \times \$1.80$ = \$54.00.

At this time Miss B. wrote, "Sometimes Albert can get the right answer but has great difficulty in writing the solution." In the fourth week he was promoted to solutions a bit more complex:

If in 1 hour a man rides 8 miles,
in 7 hours he will ride 7×8 miles = 56 miles;
in 11 hours he will ride 11×8 miles = 88 miles;
in 12 hours he will ride 12×8 miles = 96 miles;
Together in the 3 days he will ride 240 miles.

About the first of July Albert advanced to one step problems in division. In the sixth week he was writing with difficulty solutions such as this:

If one quart of berries cost 10 cents
 8 quarts of berries will cost 8×10 cents = 80 cents.
 If 8 quarts of berries are exchanged for
 5 yards of ribbon and 15 cents,
 the ribbon is worth 80 cents - 15 cents = 65 cents.
 If five yards of ribbon cost 65 cents
 1 yard costs $65 \div 5 = 13$ cents.

In the middle of July he was working with simple fractions.

Many, perhaps most, of these problems he had to be taught to solve. I find a note for July 14th stating that he had no idea how to do the problem:

How many men will be required to do as much work in 3 days as 7 men can do in 9 days?

By the end of September Albert could add, subtract, multiply, and divide fractions acceptably, and was writing solutions of the following grade:

Three boys have 240 marbles.
 One boy has $\frac{1}{3}$ of the share, or $240 \text{ marbles} \div 3 = 80$ marbles.
 The second boy has $\frac{1}{4}$ of the share, or $240 \text{ marbles} \div 4 = 60$ marbles.
 Together they have 80 marbles plus 60 marbles = 140 marbles.
 If the third boy has the remainder he must have $240 \text{ marbles} - 140 \text{ marbles} = 100$ marbles.

He had covered about 120 pages in Brook's Standard Arithmetic.

In the four months of work with Miss B., Albert gained enormously in both attention and understanding—an improvement which seemed to justify his beginning some work in geography. A glance through Miss B.'s notes, however, shows how deficient he still was in understanding:

Sept. 26. He is reading Carpenter's "Geographical Reader of Europe." It is incredible how little he really grasps when reading. The story he wrote today shows considerable improvement in composition, writing, and punctuation, but not in ability to remember more points in the story."

On another day she wrote: "I told him what *Mohammedan* meant, and *hereditary*. One might as well save breath telling him things like this." She noted that his concentration of attention was better. "He has greatly improved in being able to learn things in a shorter time," but adds, "He doesn't work by himself unless there is no escape."

Too much credit cannot be given Miss B. for the work she did with Albert in that summer of 1914. In that time she laid the foundation for all the work that he did subsequently. In those four months she and Dr. Witmer together made him settle down to work.

His mental capacity was markedly increased, in that the nervous distractibility of attention which so interfered with his mental processes was distinctly modified.

Steadily during this summer of work and discipline Albert grew quieter and happier. Through the first months when he had been given more freedom, he had grumbled and criticised; but it seemed that the tighter the rein by which he was held, the less he fretted, and the greater his coöperation and good will. Because his days were full of work, he enjoyed with zest the horse-back rides, the pitching of quoits, the day at Willow Grove, the occasional picnic or moving picture show that relieved the monotony of his tasks. Because, too, he felt the change in appearance, in manner, and in mental grip that in spite of himself was being wrought in him, he glowed with a new sense of well-being and self-respect, and with a genuine respect, moreover, for those who had worked the change.

The outward change, the one that the boy valued most, was due to the will and personality of Mrs. G. In June she and Albert had met as two antagonistic forces. She despised him; he hated her. By September there was a difference in their mutual attitude. Mrs. G., seeing the boy transformed, step by step, into an individual, in appearance and behavior less unacceptable, came to tolerate him. She began to feel something, too, of the warmth that goes out towards one's own handiwork. Albert, on his part, gave to her, perforce, his reluctant but genuine respect and admiration.

One day late in September, Albert's father and sister came to see him. He had lost something of his obstinate assurance that his family were the acme of all wisdom and breeding; yet he had for them still, all the loyalty and affection which is so fine a characteristic of his race. He knew that in the past they had been ashamed of him, and from the bottom of his boyish heart he hoped now that they would see and appreciate in him the change for the better. Unfortunately they both came primed with the mother's theory that Albert responded only to nagging and criticism. They expressed to us their surprise and pleasure at his improvement, but for the boy himself had never a word of appreciation.

After they had gone, Mrs. G. found Albert thrown full length upon his bed, sobbing passionately. Mrs. G.'s faults may have been stronger and more conspicuous than those of most people, but she was gifted, at the same time, with an extraordinary sympathy for the "under-dog," and a tremendous will and power to help him up. "Lame dogs," says Hugh Walpole, "find a warm home in Russia." Mrs. G. had the heart of a Russian, and when she saw him there, the boy in whom was stirring the ambition to battle against his neurotic

heritage, alone, hurt, unappreciated by those nearest to him, there rushed out to him all the rich impulse of her sympathy. Impulsively she stretched out her hand and let it rest a moment on his black head. "You poor baby!" she exclaimed.

Startled, surprised, Albert turned, and raised his eyes from the crimson velvet rose in the girdle of the chic blue taffeta gown, to her face,—the face in which he had seen so steadily since June the hard lines of the force that had conquered him. There for the first time he saw a new quality of sympathy and tenderness and the will to help. In bewildered gratitude he reached out to catch the hand that had touched him in pity, and kissed it.

From that moment the two were no longer antagonistic. The Viking qualities in Mrs. G. were fighting now, not against him, but for and with the boy she had made and was making. They were fighting together, now, against the criticism of his family, and indeed against the very dictum of society that might class him as inferior.

It was not long, therefore, before she took over his class room teaching. Mrs. G. had never taught; it was the very last thing she had either expected or wished to do. For it she had no specific equipment other than a keen intelligence and a splendid memory for the remarkably thorough education of the continental private schools. Of psychology she knew nothing, and delighted provocatively in dubbing it "Nonsense!" In this particular instance, however, she had a tremendous asset in the strength of her dynamic will to draw, to compel, if need be, to hypnotize Albert into normality.

(To be concluded.)

CHILDREN TESTED BY THE POINT SCALE AND THE PERFORMANCE SCALE.

BY RUDOLPH PINTNER, PH.D., AND JEANNETTE C. REAMER.,
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The present study is a comparison between ratings of the same children on the Yerkes-Bridges Point Scale¹ and the Pintner-Paterson Performance Scale.² Since the authors of the latter scale suggest four possible ways of computing mental age, a comparison of the ratings on the Performance Scale by these four methods is made.

This study therefore raises two distinct problems. The one, rather technical in its nature, is as to the best method, out of four possible methods, of computing mental age on the Pintner-Paterson Performance Scale. The other, of very wide interest, is as to the best method of measuring general intelligence, whether by a scale involving no language responses or by a mixed scale of language and performance tests. The latter question is merely raised in this study and we cannot at the present time expect a conclusive answer, which would necessitate exact knowledge of the rôle of language in the development of intelligence. Does the development of language indicate the development of intelligence? Are language stimulus and language response necessary to develop intelligence? Are individuals who are limited in the reception of such stimuli and in their responses to them handicapped to that extent in the development of their intelligence? Is the measurement of the ability to do things as adequate a measurement of the general intelligence of an individual as is a measurement based upon language responses? Are the language responses of the individual correlated well or not so well with his performances? Can there be development of ability to make language responses out of proportion to ability to perform, and if so is the ability to make the language response or the non-language response the best measurement of the intelligence of the individual? More specifically, will the mentality of the individual be best measured by a scale of performance tests, or by a mixed scale of performance and language tests, or by a scale of language tests alone?

¹ Yerkes, R. G., Bridges, J. W., and Hardwick, R. S. *A Point Scale for Measuring Mental Ability*. Baltimore: Warwick and York, 1915.

² Pintner, R., and Paterson, D. G. *A Scale of Performance Tests*. New York: Appleton and Co., 1917.

These are the questions involved in the comparison of the Yerkes-Bridges with the Performance Scale. A complete answer to all of them is impossible, but some light may be thrown upon them as a result of this study.

THE SUBJECTS.

The children used for this work were ninety-seven inmates of a County Children's Home, including all from the first grade through the eighth grade.

On the whole the intelligence of this group is somewhat lower than the general level of a public school. However, as we are not concerned with the intelligence of the child but rather with the correlation of his ranking on the two different scales, the lower average intelligence can make no difference in the results of this work.

Another group includes twenty-six subjects from the first grades of a public school in a very poor district of the city. The children range from five to twelve years of age.

The remainder of the total number is made up of fifty-five miscellaneous cases examined at the University Psychological Clinic. In this group the range is from five years to nineteen.

The total number of children tested is one hundred and seventy-eight.

SCORING.

The total credits on the Point Scale were counted according to the standard method. The mental age derived from the total credits was computed from the table of age norms first published by the authors. The intelligence quotient of each child was then determined. On the Performance Scale the responses were evaluated according to the four possible methods suggested by the authors, and intelligence quotients for the three methods, which express the results in mental ages, were calculated. The fourth or percentile method cannot be used for conversion into an intelligence quotient.

RESULTS.

Tables 1 to 4 show the distribution of the total number of cases according to the mental age as determined by the Yerkes-Bridges Scale and the three methods of the Performance Scale. These tables give interesting pictures of the range of the two scales. It will be noticed that the mental ages on the Yerkes-Bridges Scale reach up to age eighteen. The median mental age and the point age methods of the Performance Scale stop at age fourteen, while

MENTAL AGE.																			
Chronological Age.		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total	
	5	1	2			1	1											4	
	6		3			1	6											14	
	7			4	5	6	6	5	1									19	
	8		1	6	1	1	6	4	2									19	
	9						12	4	3	1								21	
	10			1	1		9	4	3	3	1	2						24	
	11		1		2		4	4	4	4	3			1				21	
	12						2	4	4	4	5	1				1	1	17	
	13						2	3	3	5	1	1						19	
	14					1		3	3	3		1		1		1	1	14	
	15						1		1									3	
	16								1	1			1	1			1	6	
	17						2		1		1							3	
	18							1										1	
	19								1									1	
	Total		1	7	15	11	11	45	28	17	26	8	4	2	3	1	3	3	178

TABLE 1.—DISTRIBUTION ACCORDING TO MENTAL AGES ON THE YERKES-BRIDGES SCALE.

		MENTAL AGE.																	
CHRONOLOGICAL AGE.		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total	
	5			3	1	2	3											4	
	6			5	4	5	3											14	
	7			3	5	5	3	2	1									19	
	8			2	6	8	2	2										19	
	9				5	4	2	2	1									21	
	10			1	2	3	4	7	1	1	1	1						24	
	11				2	3	6	2	6	3								21	
	12				1	1	3	8	1	1	7							17	
	13					2	1	4	1	1	2	2	1					19	
	14				1			8	3		2	1	3					14	
	15							1	1			1						2	
	16								2	2	1		1					6	
	17						1											3	
	18						1											1	
	19						1											1	
Total				14	22	28	34	28	14	8	18	7	5					178	

TABLE 2.—DISTRIBUTION OF CASES. PERFORMANCE SCALE. MEDIAN MENTAL AGE METHOD.

the year scale method stops abruptly at a mental age of thirteen. This is due to the fact that our norms do not go beyond fourteen years. The scale as a whole might be discriminative above this point if the standardization were extended, although in some tests with which children above the age of fourteen have been tested, there are indications that the tests do not discriminate between individuals whose mentality exceeds the mental age of fourteen. If an extension of the norms were to show this to be true, then the scale would be limited in its use to children below the age of fourteen.

MENTAL AGE.																			
Chronological Age.		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total	
	5		2	1	1	4	2											4	
	6			5	3	3	1	2										14	
	7	1		2	3	10	6	2	1									19	
	8			5	1	9	1	3	2									19	
	9				1	8	6	4	2									21	
	10			1	3	3	5	4	2			6						24	
	11					1	6	6	2		5	1						21	
	12				1	1	4	2	2			7						17	
	13					3	2	2	3			2	3					12	
	14				1	3	1	2	3			4	1					14	
	15						1	1	4			1		1				2	
	16							2										6	
	17						1	1		1		1						3	
	18						1	1			1							1	
	19						1	1										1	
Total		8	14	14	39	28	28	16	6	21	8	1						178	

TABLE 3.—DISTRIBUTION OF CASES. PERFORMANCE SCALE. POINT AGE METHOD.

		MENTAL AGE.																	
CHRONOLOGICAL AGE.		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
	5	1		1	1		1												4
	6					5	3	4	1	1									14
	7			2	1	1	3	5	4	1									19
	8				1	3	1	5	5	2									19
	9					1	1	1	10	2									21
	10					1	2	3	2	3									24
	11							1	4	3			1						21
	12							2	3	5		6	3						17
	13									3		5	5						13
	14					1			1	3		3	2						14
	15									1		1	7						2
	16											1	1						6
	17										2	1	3						3
	18									1									1
	19									1									1
Total		1		3	3	10	12	21	27	22	28	27	24						178

TABLE 4.—DISTRIBUTION OF CASES. PERFORMANCE SCALE. YEAR SCALE METHOD.

The distributions according to intelligence quotients, show very much the same features as the mental age distributions, that is, that the Yerkes-Bridges intelligence quotients show the most nearly normal distribution. On the distribution according to the Performance Scale the point age method conforms most nearly to the Yerkes-Bridges, while the year scale method extends up to very much higher intelligence quotients, thus spreading the distribution of the cases out at the upper end. Conversely, the median mental age method masses more cases at the lower end.

Graph 1 shows these different distributions. The curves are

fairly normal considering the total number of cases. On the whole the point age curve follows the Yerkes-Bridges most closely. The median mental age method shows a curve which conforms very well with the Yerkes-Bridges except at the lower end. The year scale method shows very few cases at the lower end of the distribution and far too many at the upper end. The cases are, furthermore, very scattered.

CORRELATIONS

The formula $P = 1 - \frac{6\sum(d^2)}{n(n^2-1)}$ was used. Correlations have been

computed with the Yerkes-Bridges ranking in each case and they are as follows:

Yerkes-Bridges and Median Mental Age.

P = .50 r = .52 P. E. = .037

Yerkes-Bridges and Point Age Method.

P = .55 r = .57 P. E. = .037

Yerkes-Bridges and Year Scale Method.

P = .59 r = .61 P. E. = .033

Yerkes-Bridges and Percentile Method.

P = .41 r = .43 P. E. = .043

With the exception of the percentile method, the correlations between the Yerkes-Bridges and the Performance Scale are all above .50 and the probable errors are small. The difference between the three correlations above .50, that is, .52, .57, .61, is small, so that as far as these correlations are concerned we cannot say that any of the three methods is decidedly superior to the others. The fact that the three correlations are not higher would seem to indicate that we are not testing exactly the same kind of ability by the Performance Scale as by the Yerkes-Bridges Scale. Both scales are testing ability of some kind and on the whole rank the individuals in much the same order, but there is some difference between them. As to which scale gives the better ranking of the individual in accordance with his real intelligence, it is, of course, impossible to say. The conclusion for practical work would seem to be that where possible, both scales should be used. A combined rating of the individual's achievement on both scales might give us the best index of his intelligence.

CORRELATIONS FOR SPECIFIC AGE GROUPS.

The groups at ages ten and eleven were used because they contained the largest number of subjects. The Spearman Foot Rule Method was used. The correlations between the ranking on the Yerkes-Bridges Scale and the ranking on each method of the Performance Scale, and also between each method and every other method of the Performance Scale were computed. The correlations are as follows:

Age 10. No. of cases 24.

	R	r
Yerkes-Bridges with Median Mental Age.....	.45	.65
“ “ “ Point Age Method.....	.49	.70
“ “ “ Year Age Method.....	.50	.71
Median Mental Age with Point Age Method.....	.88	.98
“ “ “ “ Year Age Method.....	.75	.92
Point Age Method with Year Age Method.....	.79	.95

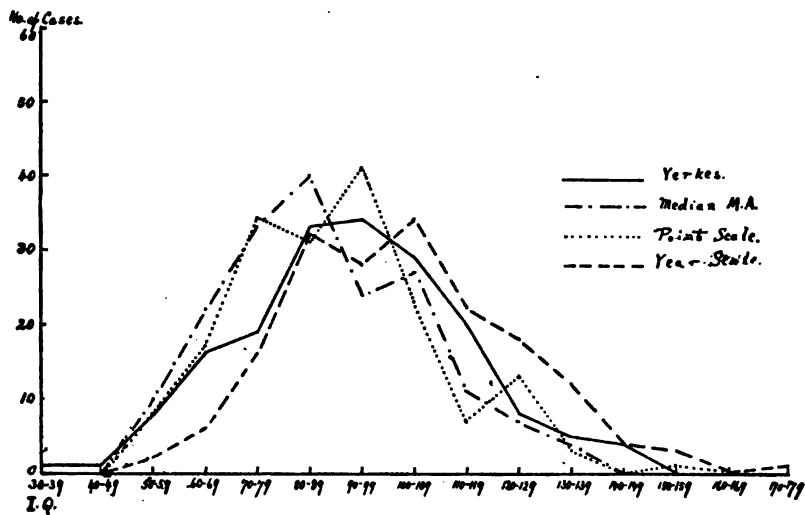
Age 11. No. of cases 21.

Yerkes-Bridges with Median Mental Age.....	.21	.32
“ “ “ Point Age Method.....	.33	.50
“ “ “ Year Scale Method.....	.34	.51
Median Mental Age with Point Age Method.....	.70	.89
“ “ “ “ Year Scale Method.....	.69	.88
Point Age Method with Year Scale Method.....	.74	.92

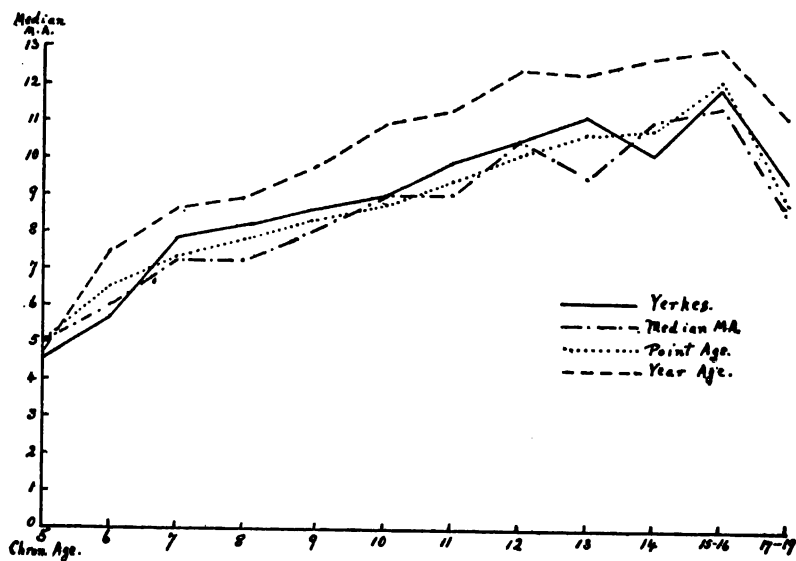
The correlations of the different methods of the Performance Scale with every other method are higher in all cases than the correlations of the Yerkes-Bridges and the Performance Scale. This is exactly what we would expect, because even with the different methods of computing mental age, we are measuring the same abilities.

Table 5 shows the median mental age for each chronological age according to the four methods. This table shows a rather consistent rise of the mental age with the chronological age. In reading across the table the relative differences between the different methods and the Yerkes-Bridges Scale is again brought out. In following down the column, or in other words, with the advance in chronological age, we see the increase in median mental age. The increase from year to year is not constant, nor would we expect it to be, but there is some increase all along, except at age thirteen on the Performance Scale and at ages fourteen and above on both scales. Our older children would seem to be more retarded mentally than our younger.

The average of the differences at each age between the Yerkes-



GRAPH I.



GRAPH II.

Bridges and the median mental age methods shows that the Yerkes-Bridges, on the average, ranks a child about .39 of a year higher than the Performance Scale.

Chron. Age	No. of Cases	MEDIAN				Year Scale minus Yerkes	M. M. A. minus Yerkes	Point Age minus Yerkes
		Yerkes	M. M. A.	Point Age	Year So.			
5	4	4.6	5.0	5.0	4.8	+0.20	+0.40	+0.40
6	14	5.75	6.0	6.47	7.40	+1.65	+0.25	+0.72
7	19	7.8	7.0	7.31	8.60	+0.80	-0.8	-0.49
8	19	8.16	7.0	7.63	8.93	+0.77	-1.16	-0.53
9	21	8.64	8.0	8.32	9.80	+1.16	-0.64	-0.32
10	24	9.0	9.0	8.9	10.95	+1.95	0	-0.10
11	21	9.9	9.25	9.37	11.26	+1.36	-0.65	-0.53
12	17	10.5	10.5	10.12	12.4	+1.90	0	-0.38
13	12	11.15	9.5	10.69	12.26	+1.11	-1.65	-0.46
14	14	10.10	11.0	10.82	12.7	+2.60	+0.90	+0.72
15 } 16 } 17 }	8	11.9	11.42	12.07	13.0	+1.10	-0.48	+0.17
18 } 19 }	5	9.42	8.50	8.88	11.09	+1.67	-0.92	-0.54
Average Differences.....						+1.35	-0.39	-0.11

TABLE 5.—MEDIAN MENTAL AGE FOR EACH CHRONOLOGICAL AGE BY EACH METHOD, WITH AVERAGE DIFFERENCE FOR EACH.

The same average difference for the Point Age Method shows the Yerkes-Bridges diagnosis only .17 of a year higher. The largest difference of all occurs with the Year Scale Method, where it is 1.35 of a year higher than the Yerkes-Bridges median.

Graph 2 makes the point somewhat clearer, that the variation between the methods, except in the case of the Year Scale, is not very great. The graph shows the median mental ages for each chronological age calculated according to the four different methods. The curves for the Yerkes-Bridges, the Median Mental Age and the Point Scale are on the whole rather close together, while the Year Scale curve is very much above the others at every age.

DIAGNOSIS BY THE DIFFERENT METHODS.

The diagnoses shown in table 6 are made roughly from the tables of distribution according to intelligence quotients and so do not follow the usually accepted divisions. Intelligence quotients below .70 are supposed to denote feeble-mindedness, those from .70 to .89 backwardness. Subjects receiving quotients from .90 to

	Feeble-minded	Backward	Normal	Bright	Very Bright	Totals
Intelligence Quotients..	0-69	70-89	90-109	110-129	130-	
Yerkes-Bridges	26	52	63	28	9	178
Median Mental Age....	32	73	51	18	4	178
Point Age.....	25	65	64	20	4	178
Year Scale.....	8	48	62	40	20	178
Totals.....	91	238	240	106	37	712

TABLE 6.—TABLE OF DIAGNOSES, SHOWING DISTRIBUTION OF CASES BY EACH METHOD.

1.09 are considered normal, from 1.10 to 1.29 bright, and from 1.30 upward very bright.

The median mental age method has the advantage of being a very easy and quick way of determining a child's mental age, but it grades a larger percentage of the cases feeble-minded and backward, and fewer normal, bright, or very bright, than the Yerkes-Bridges Scale.

The year scale method goes to the other extreme. An abnormally large percentage of cases are thrown into the groups of bright and very bright.

The correlation of the percentile method with the Yerkes-Bridges is the lowest of the four methods and at present does not seem to be of much value. Possibly this is due to the comparatively small number of cases tested at each age. There should be several hundred at each chronological age to give reliable norms according to this method. The advantage of such a distribution is that new cases can always be added. This addition may be accomplished at some future date.

In table 6, showing the distribution of cases as diagnosed, it will be seen that, on the whole, there is less variation in the size of the groups diagnosed feeble-minded, backward, etc., by the Yerkes-Bridges Scale and the Point Scale Method on the Performance Scale than in the case of the other two methods. The difference between the medians for these two rankings is only .11 of a year.

At present it would seem that either the Median Mental Age Method or the Point Age Method gives a close enough approximation to the Yerkes-Bridges Scale for all practical purposes, although just where the dividing lines between different grades of intelligence are to be drawn, it is difficult to say. The correlations between the various methods of the Performance Scale and the Yerkes-Bridges Scale, although not extremely high, are, however, high enough to

indicate that both scales are roughly grading the children in the same way. There is, of course, a certain amount of discrepancy and this indicates that the two scales are not testing the same qualities, and that ability to make accurate language responses to the tests of the Yerkes-Bridges Scale does not imply similar ability to make non-language responses, such as are required by our performance tests. This difference between ability on language and on performance tests has been repeatedly pointed out and has shown itself strikingly in this study. It is precisely for this reason that a performance scale is required to supplement our present intelligence scales with their emphasis upon tests requiring language responses.

SUMMARY.

1. A comparison between the Yerkes-Bridges Scale and the Pintner-Paterson Performance Scale has been made by comparing the records of 178 children tested on both scales.

2. The correlation between the two scales indicates that exactly the same abilities are not tested by both scales.

3. The scales would seem to supplement each other.

4. The Point Scale Method on the Performance Scale seems to correspond most closely to the results obtained on the Yerkes-Bridges Scale.

5. The Median Mental Age Method shows a fairly close correspondence with the results obtained on the Yerkes-Bridges Scale. By the suggested method of diagnosis, it seems, however, a little too severe in comparison with the Yerkes-Bridges Scale.

6. The Year Scale Method of the Performance Scale is much too lenient in comparison with the Yerkes-Bridges Scale.

7. The Percentile Method of the Performance Scale is of doubtful value with the present inadequate standardization.

CLINIC REPORTS.

XIX.

An overgrown girl of 14 years 10 months was brought to the Clinic by a volunteer worker from the social service department of a hospital. Physicians who had questioned her, thought her "either innocent or sick." She does not seem to care for the boys in school although she plays with girls of her own age and gets along well with them.

Adelaide lives in three rooms with her father, who is a watchman, and her brother 19 years old, who works every day in a paper factory. The mother is dead. Adelaide keeps house for the family. In summer she does the cooking and baking, but in winter a married sister, who has a little store near by, cooks their dinners and suppers and brings them to their home. A younger brother, ten years old, lives with the sister. Adelaide said they use one of their rooms for a kitchen, her father and brother sleep in the front room and she sleeps in the middle room by the window.

The sister complains that Adelaide is dull and lazy. She refuses to work or to keep clean and it is difficult to push her. Adelaide says that she is not well. She had an operation for adenoids and tonsils last winter and has felt dull since. Three weeks ago she fell on a slippery floor and hit her head against the sink. She cherishes a feeling of resentment, and thinks that people are down on her.

The only studies that she likes in school are arithmetic and spelling. She began school when she was six years old and is now in the sixth A grade of the public school. She has had many absences but her conduct is good.

Adelaide's teacher did not know of the apparent total deafness in the left ear which was quickly discovered by testing at the Psychological Clinic. This followed scarlet fever which she had when she was three years old. She has had two operations for deafness in a different hospital, but the social worker who brought her, thought that her hospital did not know this history. Scarlet fever has been her only disease. After she was three years old she was troublesome but she was not ill. She walked at 12 months but did not talk until she was 24 months old. Nothing is known of the circumstances of her birth, except that her mother was then 36 years old.

The mental examination revealed slow understanding and movement, with poor analytical attention but good persistence of attention and responsiveness. She worked the problems in decimals, which she is now studying, accurately but slowly. Simple mental problems she did more quickly than anything else.

She did not know the meaning of simple abstract words, although she said that she had had them in spelling lessons. She read and reproduced fairly well Terman's story of the New York fire. Her voice is husky and she lisps slightly, more noticeably when she is reading. She writes well. She can repeat five digits backward, but she transposed the last three digits when trying to repeat six forward.

Her Binet age was only 9 years, 7 months, but the performance was not qualitatively feeble-minded, rather that of a backward child. She also responded like a child of nine when asked what she wanted to do when she left school. She did not know and did not seem to have thought about it. This backwardness might be explained by her deafness and the fact that her father speaks Yiddish in the

home. Her household duties have kept her much indoors, and she has probably had little companionship with girls of her age.

The diagnosis was "No evidence of feeble-mindedness." A social investigation and an aural examination were recommended.

ANNA B. PRATT, A.M.,
Graduate Student.

XX.

Solomon is a colored boy of ten and a half years, brought by the woman who is taking care of him, because his non-conformity has caused her to desire to have him taken out of her charge unless something can be done to remedy his present condition.

Nothing is known about the history of the boy, previous to coming into his present home at the age of two years and three months. The mother is a servant, but nothing whatever is known of the father.

An attempt was made to enter him in school at the age of seven, but he was refused as being of too low mentality. He attended kindergarten over a term, and is now in the first A grade, but is making no progress.

He runs away from home and from school, making his escape from the latter even after being taken inside. He has stayed away from home for several days at a time and will not tell where he has been, though from statements he makes, it is evident that he knows where he has been. He steals money in small amounts and other articles, and will deny taking things when he has them in his hands. It is said that he does not seem to recognize the difference between right and wrong.

He is greatly retarded in physical development, his height being that of a seven year old boy, his weight and head girth being those of a boy of eight. His enlarged tonsils, very small nostrils, and catarrh, all together make breathing difficult. His teeth are very defective, badly aligned, saw-edged, and anterior to the molars there is no occlusion, the space between the incisors being as much as half an inch.

Solomon's mental age according to the Terman revision of the Binet tests, is six years and six months. All the tests of the fourth year were passed, one was missed in the fifth and the sixth years, while two tests were passed in the higher ages. The only thing in which he showed a performance approaching normal for his age was the memory span for digits, where he was able to give six; but with considerable training he could not be taught to give two backward. The form-board was done in a manner satisfactory for the first half of the seventh year, but the cylinder test and design block performances would have been considered poor for the sixth year. The Healy Construction Puzzle A was a complete failure. He works steadily and with fair speed, for ten minutes at a time, but in only two instances did he show evidence of planning or methodical procedure. The coordination was very poor for his age. Imagination is deficient. Some of his language difficulty is due to malformation of the mouth, which makes speaking so difficult as to distract his attention from what he is trying to say.

The diagnosis is low grade imbecility. Recommendations were made for a Wassermann test, nose and throat examination, and attention to the teeth. Solomon should be placed in an institution before he becomes dangerous to society. Already he is showing a wild delight in fire, which with his stealing, makes him undesirable even in a home where he can receive good care.

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XXI.

Cyrus, 8 years and 2 months of age, was brought to the Psychological Clinic by his mother and grandmother. He was referred to the Clinic by his teacher in a private school because of backwardness, which she attributed to "lack of concentration and perseverance to a marked degree." He started kindergarten at 5 years and 9 months of age and one year later entered the first grade of a public school, in which grade he spent three terms. Subsequently he was tutored at home for four months and since the third of January, 1917, has been attending a private school. He had spent approximately six weeks in this school when his teacher referred him to the Clinic to determine his mental *status presens* and to obtain advice. In my opinion, Cyrus is mentally deficient, *i. e.* feeble-minded, his grade being probably middle grade imbecile (Barr Classification). The differential diagnosis is a tentative one because some of his deficiency may be due to a lack of discipline. The diagnosis of mental deficiency is based on the result of the examination at the Clinic, on his pedagogical history, and the presence of symptoms of Mongolism.

The boy's primary mental defect is a lack of attention. Even his teacher recognizes this fact and attributes to it his lack of progress. His attention is easily distracted and he is deficient in analytic and distributive attention. He is alert and willing, but due to insufficient planfulness, deficient associability and deficient powers of observation, his efforts are poorly directed and oftentimes futile. He is very energetic and vivacious, but his movements, especially those of his hands and arms, are excessive and poorly controlled.

Cyrus is a very good actor. It is his chief delight to entertain those around him. He talks incessantly in an incoherent manner, passing from one subject to another with the greatest facility. These monologues are accompanied by the most appropriate gestures. In the presence of his mother these spontaneous, loquacious outbursts are inhibited, but a slight suggestion with the mother's sanction is sufficient to start him off. This facile use of spoken language, if properly controlled, is a very conspicuous asset for this boy. In my opinion discipline and expert training can accomplish an improvement in his behavior so marked that an uninured observer would not suspect mental deficiency.

This boy's mental deficiency, in my opinion, is due to an arrest of development *in utero*. His lack of persistent attention, the texture of the skin of his hands and arms, the palms of his hands, excess of movement and the tendency to flit from one thing to another are symptomatic of Mongolism. The face does not show any of the typical Mongoloid stigmata nor is the form of the hand typical, nevertheless his behavior suggests it and the fact that the mother was in poor health during the period of gestation also is significant. Cyrus was backward in walking and talking and was threatened with rachitis for the first two years of his life. The latter fact is indicative of malnutrition, resulting in functional retardation and, in my opinion, was nothing more than the continuation of an inter-uterine condition. At present he is precocious at least a year in height and weight.

Cyrus is attempting first grade work. His teacher reports that he "is now reading a first reader with a great deal of assistance." In my opinion his acquisition of written or printed language is largely mechanical, *i. e.* he acquires it in the same manner as he would the performance of a trick. The number of words which he is able to recognize and graphically reproduce is very limited, certainly more limited than it ought to be for a normal boy who has received the attention that Cyrus has received. In number work he is able to count

to twenty. This is not an enviable record for a boy of eight who has been under instruction for six terms. In spite of his facility in the use of spoken language it is not likely that he will be ever able to acquire the fundamentals of an education so that it will be of much assistance to him in the practical affairs of life.

Cyrus' mental deficiency is due to a lack of ability so marked that he will probably never be able to maintain himself independently in society. Nevertheless, inasmuch as the family is able to care for this boy and the differential diagnosis is only a tentative one, immediate institutional care is not recommended. A complete pedagogical report should be obtained; he should receive careful individual instruction in school work at the hands of a good disciplinarian; the discipline in the home should be more rigid, and another mental examination should be made to determine the grade of feeble-mindedness.

FRANK H. REITER, PH.D.,
Instructor in Psychology.

NEWS AND COMMENT.

War Meeting for Health Officers.

A war meeting will be held at Washington, D. C., Oct. 17-20, 1917, by the American Public Health Association. This will replace the annual meeting which was to be held at New Orleans, La., Dec. 4-7, 1917.

The papers and conferences will deal largely with the health problems created by the Great War,—the food supply, communicable diseases among soldiers, war and venereal disease, war and the health of the civil population, etc.

President Wilson has said: "It is not an army we must shape and train for war; it is a nation." Go to the Washington meeting; then come back and do your bit!

Washington will be crowded and those interested are urged to reserve hotel accommodations at once. It will be easy to cancel reservations; but it may be impossible to obtain rooms at the last moment. Any hotel or railroad can give a list of Washington hotels.

Preliminary programs will be automatically mailed to all members of the A. P. H. A. about Sept. 15th. Non-members may receive them free by writing to:

The American Public Health Association,
128 Massachusetts Ave., Boston, Mass.

United States Food Administration Committees.

Realizing that the nutrition of a people and the condition of its food supply bear intimate relations to the general problems of public health, the United States Food Administration has sought the advice of experts and announces the creation of an Advisory Committee on Public Health. Dr. William H. Welch has been named as Chairman of the Committee, the personnel of which is as follows: Leonard P. Ayres, Herman Biggs, David T. Edsall, Cary T. Grayson A. Walter Hewlett, T. T. Janeway, F. G. Novy, Richard M. Pearce, and H. Gideon Wells.

In addition, Dr. Alonzo E. Taylor and Dr. Ray Lyman Wilbur, members of the Food Administration, will be ex-officio members of the Committee.

It is believed that through the advice and co-operation of this committee, representing specialized workers in the various correlated departments of medicine, the administration of food control will be enabled always to work for the best interests of the health of the different sections of our country.

The United States Food Administration further announces the creation of an Advisory Committee on Alimentation, the purpose of which is to gain the active co-operation of experts in the determination of policies of food control from the standpoint of the science of nutrition. The Committee consists of C. L. Alsberg, Russell H. Chittenden, C. F. Langworthy, Graham Lusk, LaFayette B. Mendel, and E. V. McCollum.

In addition Dr. Alonzo E. Taylor, Dr. Ray Lyman Wilbur and Dr. Vernon Kellogg, members of the Food Administration, are ex-officio members of the Committee on Alimentation.

The Psychological Clinic

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VOL. XI, No. 6

NOVEMBER 15, 1917

ORTHOGENIC CASES.

XII. A STUDY OF THE INTERPLAY OF PERSONALITY.

BY SARAH WARFIELD PARKER, A.M.,
Philadelphia, Pa.

(Concluded.)

The work that Miss B. had done with Albert, based on Dr. Witmer's mental analysis, was clearly what he has called "diagnostic teaching." For Mrs. G.'s type of teaching I know no other word than temperamental. Her own impulses and interests, even her whims and fancies, determined its time, its place, its manner, and its content.

It is said that Russians know neither time nor system. Certainly Mrs. G. knew them only to scorn them. She took Albert's work out of the classroom, and out of all conventional routine. She taught him at any time, and in any place. Indeed, it is small exaggeration to say that when the passion for teaching was upon her, it was at all times and in all places. She taught him whenever and wherever it pleased her.

She taught him on the bench under the wide gray beech tree, while with swift, expert fingers she did the household mending; or on the stone parapet of the porch with the soft color and haze of autumn spread out in the valley below them. She taught him in the basket wagon as she jogged along to market, whip in hand to flick the steady old horse into his ridiculous, futile gallop. Sometimes, on chill days, they sat by the great stone fireplace, in the two chairs which stood straight and distinguished on either side of the hearth; and sometimes she lay on the long, brown-cushioned bench over the radiator with a volume of Ibsen, or Strindberg, to fill the time, while Albert wrote at the flat table desk close by. Often they worked together up in her own big room with its many windows looking out to the bare, clean-limbed trees of late fall and

winter. Wherever her work or pleasure happened to be, there Mrs. G. taught Albert.

The manner of her teaching was just as unconventional. Her method was determined wholly by her temperament. Swift remarked of Queen Anne that she had only a sufficient stock of amity for one person at a time. Mrs. G. poured out her energy and interest with so much intensity in one direction that, like Queen Anne, she had small surplus for any other object. She did one thing, and did it hard; was friend to one person, and scarcely to any other; espoused one cause, and it alone, till the volume of her energy was spent. Then, after a little, with the same intense, transitive concentration, she passed on to another object.

The kaleidoscopic series which passed before our eyes within the space of a few months was worthy of Mr. Toad in Kenneth Graham's "The Wind in the Willows."

One day she ate thirteen grapefruit, and little else; for two or three days she consumed bowlfuls of brandied peaches—then banished both from the table. For a week, she played bean bag, for three consecutive hours every evening, holding some adult to the game long after the children were in bed, and flinging the bags with tremendous force the full length of the living-room; till at the end of the week she tossed them aside. For one week, ball; for another, jumping rope; and, for a longer stretch, checkers, held the field. In October she bought an expensive riding habit, breeches and a short-coat, which revealed the massiveness of her figure. She bought, too, a little round hat with a pompom, boots, and gauntlets, stocks, and a gold scarf pin—every possible accessory. In this costume, for a few weeks, she rode doggedly, often imprudently, in spite of very real fear and vertigo. Then the habit was hung away, till its time came to serve with less dignity as a coasting costume in a brief fever for the Flexible Flyer. For one fortnight, after breakfast, after dinner, after supper, the house was gay with the rhythmic measures of the Pavlowa Gavotte, while with practiced feet and movements not ungraceful, Mrs. G. danced it over and over again, sometimes alone, sometimes with Albert, sometimes with one or two others who had learned the steps from her. We never saw her dance again as long as she was with us.

In objects less trivial her interest was just as concentrated, but, fortunately, more sustained. For the winter before she came to us, the major part of her energy had been enlisted in the work of one of the city rescue missions. During that year she had talked and thought constantly of her "bums." By her determination, her force and her magnetism, she had awakened the dormant wills

of at least two or three of these outcasts till they had freed themselves from the bondage of drink and drugs—a winter's work well worth while. When, however, she ceased to give *all* her interest to this work, she could give none of it.

To the energy for regeneration which Mrs. G. had at one time poured into the rescue mission, Albert was legitimate successor. Her interest in him was not trivial—it was rooted deep in her capacity for compassion, in her sportsmanlike response to the challenge to achieve the barely possible, in her passion to dominate and mould the lives and characters of others. Therefore the intensity of her interest was sustained throughout the year that she and Albert worked together. To the task of raising him to the threshold of social sufficiency she devoted all the concentrated energy and will with which she had lifted her “bums” from the gutter.

That was her method—to give all of her time, of her energy, of herself, to the mental and social regeneration of Albert.

This same temperamental insistence on concentration determined her program of work. Mrs. G. could not divide her time and thought into the usual daily program of a half hour of this and a half hour of that. She must choose one subject as her point of attack and teach it all day long, week after week. The disciplinary teaching, without which, though she never acknowledged or, indeed, realized it, Albert's response to her own teaching would have been impossible, she threw aside as nonsensical. Her own criterion of social success as the touchstone of life, made her concentrate upon the attempt to introduce into him in tabloid form such information as she deemed essential to that success. She chose, of course, to introduce but one kind of information at a time.

“To be dining out,” she said, “and not to know where Galeetzia (Galicia) is; now tell me truly, is it not that which you call really feeble-minded?”

To save him from such a social disaster, Albert, she declared, must be taught *facts* as rapidly and as vigorously as possible,—first of all the facts of geography.

This was not easy. It took two weeks out of the month of October to teach him the capitals of Europe. This was the stunt Dr. Witmer had assigned to Mrs. G. to prove that Albert had developed enough mental ability to learn from her any series of associated facts. When that test was passed, Dr. Witmer gave his consent to her usurpation of Albert's school work.

So it came about that all that fall and winter, our house, upstairs and down, inside and out, was dominated by Albert and geography,—the geography of the Eastern Hemisphere, of Europe, Asia, and

Africa, of Australia and the South Sea Isles. Mrs. G. never hid her light under a bushel. She taught volubly, vociferously, all over the house, and wanted us to stop our work to watch hers. In the evening we must play audience at an exhibition of what Albert had learned, or had not learned, through the day. When at last bedtime delivered us from Albert we still had geography with us. As in the summer we had played bean bag, so now we had to listen on into the night to a recapitulation of the day's struggles and successes with Albert and the German Empire, or the British possessions in Africa. The very walls seemed to resound with the guttural roll and hiss of Ekaterinaburg, Schleswig-Holstein, and Tannarivo.

By her vigorous summer campaign Mrs. G. had scrubbed and tailored and trained out of Albert many of the external earmarks of commonness. She proceeded now, by the way she taught him geography, to sweep him out of his blatant provincialism. The modern method of beginning geography in your own back yard was not hers. She carried him promptly overseas—and all of us with him. On the wings of Mrs. G.'s fluent, staccato English with its twisted idioms, in the light of her rarely vivid visual imagination, we left behind us the house on the knoll above the quiet Pennsylvania valley, and lived for hours in the north of Europe, or even now and then, in Southern Europe, or Asia. Because of a certain enigmatic quality in the woman herself, and because of her power to carry us with her into her stories and pictures, we were willing, for the moment, to be credulous. Once back again in Pennsylvania we suspected that Mrs. G.'s participation in the scenes and adventures she described might be the device of the *raconteuse* to achieve dramatic vividness. We could not, however, sift truth from fiction, and we did not wish to. We sat with Albert on the magic carpet of Bagdad and were whisked into other lands.

We sped with her at night in sleighs over the frozen Neva; we danced at the king's ball in Stockholm; we watched her as a child, laughing while a great Russian general pinned on her white frock a decoration, the Czar's tribute to his triumphs in the Turkish War. At Skaagen on Skagerrack we found ourselves dining at a table next to Ibsen; in "Draysden" (Dresden) we visited her in her girlhood at a superlatively select school for young ladies and saw vividly the very pattern on the delicate Dresden porcelain with which we were served. She took us to a gay restaurant of the Russian capital where, from a great pool bright with many-colored fish, we chose the one destined for our meal. We wintered with her gaily in Corfu, and stayed for a while in England,—a distorted

England, stupid, scheming, hostile. She gave us a bright glimpse of Paris, and told us thrillingly of how once, threatened with imprisonment in "Bearleen" (Berlin) for presenting a green ticket in the wrong compartment of a car, she escaped through the intervention of a school friend, the daughter of Von Buelow. She pictured for us Pavlova dancing in the first days of her genius in the Imperial Opera House at St. Petersburg; made us thrill to the great Easter service in St. Isaac's Cathedral, and immediately swept us into the traditional stream of Easter callers.

She told us an ironic story of the chagrin of the Czar who, wishing to travel to the Crimea over a railroad for which the government had appropriated money, could find no trace of either funds or railroad. We exulted with her when she smuggled revolutionary literature beneath the false bottom of her trunk across the border from Sweden into Finland, and again, at the gangplank of a Baltic steamer, where to escape custom examination, she passed her black bag to the wife of a cabinet minister. In a city—there was a hint that it was Riga—she showed us a dinner at her home, a gay company of officials in uniform. We saw the last guest leave, and eight *revolutionaires* steal in to beg for hiding. We were taken next morning into the office of the city Prefect of Police, one of the evening's dinner guests, and saw him smilingly, without question, give to Mrs. G. eight "safe conducts" and a detachment of gendarmes to escort the eight *revolutionaires* over the border into safety.

She drew for us the picture of the still black line of workmen, students, and priests, moving silently one January Sunday, through the white snow on the Nevsky Prospect, toward the Winter Palace, and made us hear the three swift volleys of shots which stained the snow with blood, and see the wild sweep of the bearded Cossacks with their long pikes, spurring their horses through the frightened crowd even to the top of steep church steps. She pictured for us another Sunday, "Red Sunday," in the summer of 1905. In her *dascha* on the Gulf of Finland we felt the strange silence which fell over Russia on that day. We saw a young officer take flight in a rowboat under the very guns of the warships anchored in the arm of the gulf, saw Mrs. G.'s husband rescue him from the rushes on the bank, and contrive his escape to St. Petersburg, disguised in the uniform of the Imperial Yacht Club. We heard, too, how, after some days, the long silence was broken by the sharp sound of eight hundred shots fired in terrible succession, shots that told the tale of the eight hundred mutineers in Kronstadt.

Albert never again yelled at a passing stranger his vapid remark, "New York's the only place, eh?" A new world had been opened

to him, a world full of picture and incident, and above all, a world completely dominated by a single striking personality. Although in his childhood he had travelled abroad, he now saw and felt Europe for the first time, but only as a highly colored background for Mrs. G.

He had hated her, he had cringed to her; and then he had respected her. He had been stirred by a quick sense of gratitude for her sympathy; he had been bound to her by the force of her determination to overcome his social handicap; and now he was fascinated by her power to extend the straitened limits of his immobile imagination.

He not only submitted to her extraordinary method of teaching him all day long and all evening long; he hung about incessantly, begging to be taught. He demanded her exclusive time and attention; and she yielded it. Though Mrs. G. was energetic, she often "treated" herself to a day in bed, but even then, you could always see, through her open door, the figure of Albert on his knees beside the bed, his sleek black head bent over Harper's Geography, which lay open on the counterpane.

Mrs. G., however, did not by any means fill the lesson hour with stories and adventures. Her temperamental method was as thorough and inexorable as Miss B.'s more deliberate teaching. She made Albert learn by heart every line of his geography lesson, and her standard in recitation was nothing short of 100 per cent accuracy. It used to take the boy three or four or even five hours to learn the day's assignment of eight lines. He went about with the geography under his arm, and wheedled everyone he saw into helping him, because he "couldn't get his mind on it" by himself, and he'd "just got to know it tomorrow for the Madam." Once learned, he would rattle off the eight lines at terrific speed with all Mrs. G.'s rolling r's and lengthened vowels, shooting them out at us whenever we came into the room. Yet he knew nothing of the content. She would then spend hours in compelling him to pick out the facts from the lines he had learned, and in pounding them into him with map drill and infinite noisy repetition of question and answer. Those hours were so strenuous that Mrs. G. invariably emerged with her straight brown hair hanging in untidy wisps, but Albert knew the passage for the day backwards, forwards, and upside down, and delighted to perform with it all manner of stunts in articulation.

Study hour with Mrs. G. was not play. It was hard, hard work. Albert's devotion to the geography lesson, therefore, was not born of a desire to be entertained, nor, in the beginning, to any considerable extent, of the will to learn. It grew almost wholly

out of his devotion to his teacher. One rarely encounters a personality so powerful and so hypnotic as hers. She had deliberately turned the full force of this upon an adolescent boy. The result of the impact was the total obsession of the mind of Albert by the personality of Mrs. G. Though he had brooded over his inferiority, and longed passionately to "be normal," he had not in himself the will to buckle down to the task of trying to repair his deficiencies. Now, her will and magnetism took possession of him, and he worked to please her with an energy born, not of his will, but of hers, an energy which was almost superhuman.

Toward the end of February, Mrs. G. was anxious to prove just how much Albert had learned through her vigorous pounding drill and his own enforced effort to learn. According to her habit of doing one thing at a time and doing it thoroughly, she gave a whole week to an examination in geography. She filled a notebook with questions written in her extraordinary handwriting,—script which consisted almost wholly of vertical lines of extraordinary height. There were 182 of these questions and they covered the major part of what he had learned in geography.

One who recalls the fact that less than a year before Albert said London was the capital of Paris, will scarcely credit these answers as his.

Q. What does Oceanica include?

A. Oceanica includes all the islands in the Pacific Ocean south of the Tropic of Cancer. It consists of the great archipelagoes of Malaysia, Melanesia, Polynesia, and Micronesia, the continent of Australia, with the islands of Tasmania and New Zealand.

Q. What cities do you know in Siberia?

A. Irkutsk, Tomsk, Tobolsk, Omsk, Tiumen, Ekaterinaburg, and Vladivostok.

Q. In Persia?

A. Teheran, Tabriz, Ispahan, Meshed, and Bushire.

Q. Where is the naval station of the Russian Black Sea fleet?

A. Sebastopol.

Q. Which rivers do you know in Africa, and where do they empty?

A. The Nile empties into the Mediterranean Sea. The Senegal, Gambia, Niger, Kongo, and Orange empty into the Atlantic Ocean. The Zambezi empties into the Indian Ocean.

Q. Tell me all the English colonial possessions you know.

A. In Asia I know India, Burma, Ceylon, Strait Settlements; it leases Hong Kong and protects Afghanistan and Baluchistan. It owns in Africa, Gambia, Sierra Leone, Gold Coast, Nigeria,

Cape Colony, Orange Free State, Natal, Transvaal, the Island of Zanzibar, and parts of Somaliland, Sudan and Sahara. In Oceanica England owns Australia, the islands of Tasmania and New Zealand, the northern part of Borneo, and the southeastern part of Papua.

Albert did not write these answers independently. Mrs. G. could not efface herself even in an examination. For hours, day after day, he sat at the desk writing slowly in his neat, perfectly formed hand beneath the long vertical lines of her unique script. Close beside him Mrs. G. reclined in a long wicker chair. In spite of her high collar and her pearl earrings, she was at such times rather dishevelled. She watched everything that Albert wrote, and alert to his tentative mutterings, guessed even what was in his mind before he wrote it. She never actually told him what to write but vigorously prevented his writing anything wrong. Whenever she scented a mistake she ejaculated, "Idiot!" or "My God, boy, how can you write such nonsense?" And Albert, of course, took the hint. She wanted his grading on those 182 questions to be 100 per cent, and, by this method of heading off errors, she got what she wanted. Such supervision and interference were sufficient to make this examination paper invalid as evidence of what he really had learned. Those of us, however, who had had these same lists of cities, rivers, mountains, colonies, exports, imports, and what not, dinned into our ears by Albert morning, noon, and night, knew that he could recite them orally as glibly, and with as much zest in their articulation as though they were limericks. I think it quite safe to say that scarcely a handful of fifteen-year-old boys in the United States know by rote as much of the geography of Europe, Asia, Africa and Australia as Albert did in February, 1915. A little of it he even understood.

It is obvious that he might, to advantage, have known less about Siberia and Oceanica and more about the United States of America. There could be no better example than this, of just how far temperament ruled Mrs. G.'s teaching. She realized herself that he needed to know something about his own continent, but she put America aside with a shrug,—

"It would bore me too much. Someone else will have to teach him that."

Therefore, after she had forced into him all the geography that interested her, she proceeded, in the same manner, to pour into him Ancient History, and a strange conglomeration of facts dealing chiefly with comparative religion and the genealogies of the royal houses of Europe. Mr. H. G. Wells once dubbed the education offered in a certain American woman's college, "canned culture."

Mrs. G. used all her energy to stuff Albert with her particular brand of "canned culture." Remember that in the summer he did not know that America had defeated England in the War of the Revolution, had not the slightest idea of the meaning of the word "widow," and thought that Jews, but not Episcopalians, were Christians; yet, in the early spring Mrs. G., by heroic work, made him produce another examination book of incredible perfection. This examination, written under circumstances similar to the first, represented Albert, less than nine months after his betrayal of crass ignorance, so drilled in a jargon of names and facts that he could pass off as his own, his teacher's knowledge of the races of men and their subdivisions; the dynasties of Egypt, the achievements of each of the important rulers of Babylonia and Assyria, and the colonies of the Phœnicians; the descent of the Swedish royal family from Bernadotte, the interrelationships of the rulers of Norway, Denmark, Greece, England, Russia, and Germany, and the names of the royal houses; the definitions of monotheism and polytheism, the Hebrew, Christian, and Mohammedan religions as examples of the former, the chief difference between the Christian and the Hebrew religions, the two branches of the latter,—orthodox and reformed,—the rise of the Greek Orthodox Church from the Roman Catholic Church, the difference between the two in their stand on the celibacy of the priesthood, Martin Luther and the Reformation, the names of the more aristocratic Protestant denominations, and the significance of the words Jehovah, Allah, mosque, synagogue, pagoda, Brahma, Buddha, Madonna, Osiris, Isis, Zoroaster, and Lucifer. Such a catalogue may stand without comment.

All through the autumn weeks spent together in this abnormal concentration upon geography and upon each other, there grew up between teacher and pupil a new emotional relationship.

One December afternoon Mrs. G., muffled in a white angora sweater like a big white cat, lay in the long chair. As usual, Albert was with her. One of his black moods had drawn out her abundant sympathy to meet his discouragement. For her understanding and interest, he was boyishly grateful, and unconsciously, too, he was attracted to her by intense physical and psychic forces. So, when he was leaving her, he exclaimed, "This is what we do at home," and suddenly stooped and kissed her, as she said, afterwards in her queer idiom, "middle in the mouth."

She told us of this quietly, with a sort of surprised tenderness in her voice. The boy had touched in this woman, alone in a foreign country, cut off from all the claims of kinship and of friends, her deep craving for affection. This hunger for affection was the exact

complement to the boy's own full capacity for devotion, that reservoir of hero worship which had first found an outlet in his sporadic attachment to Mr. A. In the intense concentration of the weeks when the two were perpetually working together,—weeks in which the very success of the work was dependent upon the possession of the mind of Albert by the dynamic mind of Mrs. G.,—two impulses met. The boy's adoration, which increased rapidly from the day he so impulsively kissed her, might be studied as "adolescent love," intensified, like all his adolescent impulses. But, in the woman, too, there was the same hyper-development of emotional energy, so that she met his passionate outburst of "adolescent love" with an emotion quite as intense. From this interplay of emotion, there developed a relationship imbued with all the violence, all the lack of restraint, all the fineness, and all the pathos of their two natures.

At first, of course, the quality of Mrs. G.'s affection for the boy was, in part at least, genuinely maternal. She patted his curly black head and called him "Baby." Albert, however, lacked conspicuously any sense of the respect due his elders and was, moreover, thoroughly familiar in his own home with the flagrant use of endearing epithets. To her diminutive endearment, therefore, he responded promptly with "Petsy," and whereas he had heretofore always spoken of her as "the Madam" or the "boss," he now substituted unblushingly the phrase, "my pet." Indeed, it was not long before he robbed her name for him of its maternal significance by using it affectionately himself. To our amazement we heard the fifteen-year-old boy call this big domineering woman "Baby" and she did not resent it. "Never mind, Baby; I'll fix it for you," he would exclaim with reassuring familiarity. Less than six months before, when Albert had presumed to call out in frank admiration for her smart street costume, "Tres joli, tres jaunti!" we had seen her lean from the basket wagon to flick him indignantly with the whip. Now they had swung from their first antagonism to such a remarkable unanimity that she did more than tolerate his familiarity. She accepted it with an air of pleased indulgence.

Albert came from a demonstrative family and of a demonstrative race. He was, too, at an adolescent period when impulses are peculiarly strong and inhibitions few. Mrs. G. herself was very unlike the Anglo-Saxon peoples. She knew little restraint in the indulgence of her desires, and less in the expression of her opinions and feelings. Nitikin, the Russian doctor whom Hugh Walpole has so keenly interpreted in "The Dark Forest," refers to this characteristic: "We are primitive people. We do what we want

to do, feel what we want to feel, and show quite frankly our feelings. We have simply a skin less than you." But this was not Russia! To the rest of us, Americans, instinct with reserve, bred to recoil from sentimentality, their frank exchange of caresses, their absurd bandying of pet names was repellent, disquieting. "I do not understand you Americans," Mrs. G. would protest, "In Russia it ees good to have emotions. In America it seems it ees a crime."

The new relationship between teacher and pupil, however, did not retard their work. It increased, if possible, her interest in what she called "civilizing" Albert, and reinforced in him the will to make himself conform to her pattern.

We have seen, how, by her insistent supervision through the summer and fall, Mrs. G. made him more acceptable in appearance and behavior. Now that it was no longer a mortification to her to be seen with the boy, now that she took even an affectionate pleasure in being with him, she extended this "civilizing" process to his conduct outside the house. Often they lunched together at L'Aiglon or the Bellevue, so that Albert might learn to carry himself in such places with the indifferent ease of a man of the world. She took him to one of the most popular dancing academies in the city, where, with marked facility, he learned the one-step, the fox-trot, the hesitation, and the maxixe. With these lessons supplemented by much practice at home, he was soon able to dance with ease and accuracy almost all of the intricate steps popular in that dance-mad winter of 1915.

That winter, too, Mrs. G. engaged for them season seats in the parquet circle at the Academy on Saturday afternoons for Elmendorf's travel lectures. On those days, Albert, conspicuously conscious of his rôle as escort, never failed to buy violets for her from a street vender. The first night that she took him out with her, he came down to supper, scrupulously shaved and brushed, displaying with a lordly air a white tie, the badge of his new dignity as escort for the evening. The lady came a little later, her full, beautiful shoulders showing cream-white in an evening gown of gleaming jet. Albert's dark eyes were fascinated by the sheer beauty of her, by her skin which was dull opaque whiteness, by her gown which was black, ashimmer with light. That evening he said unproved far more than "Tres joli, tres jaunti." I do not doubt that, as the two sat together in their seats in the fourth row at the Academy, his thoughts were far more with the glory of the lady beside him than with the causes of the Great War as set forth in debate by Mr. Cecil Chesterton and Herr Heinz Ewers.

Albert was required to write exhaustive accounts of these

expeditions, and *résumés* of these lectures in compositions, and in letters to his father. It was a hard and fast rule of the school that compositions and letters should represent, in so far as possible, independent work, but Mrs. G. overrode all rules. She would recount the experiences of the day or evening, the substance of the lecture or debate to each one of us in turn, first having taken good care that Albert was there to listen. By the time he sat down to write he had her account, her impressions and her prejudices well in mind. He had her, also, at his side, to suggest, prompt, and prod him on. In his first draft, whole clauses and sentences were stricken out and the pages generously interlined with sentences of her own, often with a little twist of phrase that was subtly foreign. This "edited" version was copied as the boy's final production. The following selected quotations from Albert's account of the Chesterton-Ewers debate are evidence of how much of his work was actually his teacher's. They furnish an extreme illustration of a marked tendency in untrained teachers of backward children, unconsciously to merge their own work with that of their pupils.

First draft as written by Albert:

Presently Dr. Ewers was introduced to us and we were told he was the author of several books and of witty sayings. This German orator is about six feet tall with one of these glass things which he kept on his face right near his eye. I'm afraid if this Prussian had left that behind he could not speak.

Mr. Cecil Chesterton began his speech. He said that if a Servian kills the Crown prince does that mean war should be started? Austria-Hungary took it badly so she declared war on Russia. The Germans got in the wrong. The Englishman spoke for thirty minutes and then sat down.

Second draft as "edited" by Mrs. G. and copied by Albert:

Presently Dr. Ewers was introduced to us and we were told that he was a poet and the author of several books, having a very high reputation in Germany. This German orator is about six feet tall. He wore a monocle—a thing so characteristic for the "Prussian Junkers," and was very carefully dressed in latest fashion.

Mr. Cecil Chesterton was the first one to speak. He said there was no excusable reason for Germany to declare war on Russia because a Bosnian had killed the Austrian crown prince. That there was absolutely no evidence for the Servian government having anything to do with this assassination. He said furthermore that the situation between Austria-Hungary and Servia was just getting settled in a friendly way with Russia as a mediator when Germany, Austria-Hungary's ally, declared war with Russia. He gave an intelligent, clear, strong speech. The thirty minutes were over.

The people were anxious to hear what Dr. Ewers's opinion was about the war, but they don't know yet.

We had all been curious to hear Dr. Ewers's defence for Germany. We got no satisfaction. There is probably no defence for Germany in starting this world war.

These illustrations, like the examinations in geography and in history show that Mrs. G. held Albert to too high a standard. The composition she wished him to write could only be written by an adult in whose mind were idea-complexes such as his education thus far had not even attempted to form, and certain powers of analysis which he could never possess. If need be, she would write such a composition for him. In very truth, she made everything that was hers, his,—her culture, her will, her mind, her prejudices. Indeed, she so dominated, enveloped him by the spell of her personality that he absorbed something of her ideas, even of her ability. Her method was scientifically, pedagogically unsound, fraudulent if you will. Nevertheless, when she thus pooled their resources and made Albert do work far above his own performance level, she carried him along with her, not to the impossible level she presented as his, but to a level a degree higher than his own. He could not do alone the work she exhibited as his, yet before she was through with him, the quality of the letter he wrote spontaneously more than equalled the work of most normal boys of his age. By sharing with him not only the force of her will, but even a portion of her mind, she lifted him, little by little.

This woman so gripped Albert with her will, so enveloped him with her mind and emotions, that for the time he seemed to have no separate existence. The consequent emotional tension which filled the house rose, through the winter, in a tempestuous crescendo. Neither love nor life ever ran smoothly with Mrs. G. Monotony was anathema to her; she lived only for crises. Though these are commonly the exception and not the rule of life, in the house with Mrs. G. crises came in rapid succession. With a veritable genius for manufacturing "scenes," she could magnify a trifling incident till it loomed darkly as evidence of the most abysmal stupidity, the most unspeakable "commonness," the basest ingratitude, or the most treacherous deceit.

As often as every fortnight, she worked up one of these passionate scenes with Albert. No woman was ever more capricious with her lover. She would lavish upon him the full abundance of her sentimental affection; then, in a flash, violently break with him. The occasion for such a break was always trivial,—the misplay of a single card in a game of "Flinch," or a kiss bestowed at the wrong

moment. A thing which she was accustomed to overlook or to invite, she would at another time seize as an excuse for throwing him aside with voluble invective. She vented her passion in stormy monologues, proclaiming Albert's baseness incessantly to everyone in the house. The boy himself she treated with cruellest scorn. Declaring that never, never would she teach him again, she handed him over to whichever teacher happened, for the moment, to be high in her favor.

At such times, the boy, too young to know how transient were her moods, yet precocious in the intensity of his adolescent emotions, was dropped from the seventh heaven to the lowest hell. He grew, in an hour, pale, sodden with weeping, the smooth glossiness of his black hair reverting to its original, unkempt state. He studied harder than ever, but to no purpose. After an entire day spent in trying to learn ten lines about Arabia, he dropped his rumpled head upon his arms, and, with a choking sob, cried out, "I don't know any of it. I can't even read the words. There's nothing in my mind but Mrs. G. I'll kill myself if she doesn't teach me."

After one day, or sometimes two, of abandonment to this violent discharge of the overflow of her emotions, of exultation in her power to reduce another human being to such desperate misery, there would come, without fail, a complete reconciliation. This would be effected in the course of a long session, during which, for hours, we could hear the ceaseless murmur of low voices. At length, Albert would emerge, chastened, abjectly penitent for the enormity of his unknown crime, and bound to her more indissolubly than ever by the immensity of his relief at being lifted again from such agony into the light of her favor. Mrs. G. too, would appear, much subdued, the excited glitter gone from her blue eyes, and the amplitude of her wrath transformed into the generosity of her forgiveness. Each crisis plumbed deeper into their emotional reserve so that the stormy separations grew more agonizing and the intervals of unanimity more passionately intense.

In May of that year, the month of Albert's sixteenth birthday, the school moved to Atlantic City for six weeks. There, in a cottage by the sea, the tide of emotion rose to its height.

Mrs. G. taught more violently than ever. In the brown, rectangular living room on the first floor, the mornings were clamorous with Greek History, and drill in diction. No Fourth Grade Speller for Mrs. G., but words such as *arbitrate*, *persecution*, *annulled*, *embellishment*, and *aristocracy*! Albert sat at the heavy mission table, while she ramped up and down the room, hurling instruction at him. A teacher, who retreated with her pupils to the third floor, found

that even closed doors could not shut out the volume of Mrs. G.'s voice. Only on a stormy day was there peace, when the pound of the waves against the seawall muffled the uproar of her teaching.

In their work at the seashore, they were to each other more than teacher and pupil. Albert called her "Sonia," the familiar name of her childhood. The exclamatory comments in his sentence book, written in her sharp linear hand, show how much she, too, injected the personal note into their pedagogic relationship.

Restore. Can you restore him to his senses?

Criticism: If it means you—No!

Permanent. Sonia is a permanent friend of mine if I behave myself.

Defect. No, my brains are not defective.

Criticism: They most certainly are!

Strife. I never strife with Mrs. G. as she is always right.

Criticism: If you dared you would! *Strife* is a noun.

Strive is a verb.

Implicit. I have implicit faith in Sonia's promise never to abandon me.

Despondent. Do you know how to spell "despondent"?

Criticism: Smart! I am very despondent as a result of your behavior yesterday.

Sound. When I am as mentally sound as Mrs. G. I shall be very happy.

That Mrs. G.'s own English was not always sufficiently idiomatic to make this work in diction altogether profitable, is shown by the following sentences:

Are you *adapted* for your business?

Wilson is not willing to *arbitrate* with Germany any longer.

Instantly as you know that you finally have to give in you are foolish if you don't *yield* to my wishes.

She persisted, too, in applying the French rule to the use of the possessive and taught Albert to write, "Mr. Smith's, the American ambassador, hat"! Her insistence on continental manners, her foreign pronunciation of geographical names and her teaching of unidiomatic English, positively expatriated him, making him share even her uncertain nationality.

In Atlantic City, the waves of her passionate invective broke over the boy with ever-increasing frequency and violence. She could be heard to bellow in a voice that carried to the top of the house above the lash of the sea, "I've had pets before and I've dropped them for far less than this." However, she could no longer bring herself to banish him. She reviled him, yet she kept him with

her. Banishment had made study impossible for him, but this new method tightened in the boy the tension of his effort to please and resulted in an even swifter acquisition of knowledge.

Thus, the increased force of Mrs. G.'s teaching raised to a higher power Albert's already almost superhuman effort to learn. One day, when he had displeased her, she left him alone for the afternoon, promising his restoration to favor if, on her return, he had completed a very long assignment of work. To learn anything by himself was a Herculean task for Albert, but Mrs. G. as an incentive was stronger than his abhorrence of concentrated application. So, in the quiet house, spurred on by the hope of her favor, he committed to memory a list of battles with their dates, the facts in two pages of history, and the definitions of fifteen words. When, after three hours absence, Mrs. G. returned, he was raised to the pinnacle of bliss by her praise.

Except when, with strong, sure strokes, he swam out into the sea, Albert was with "Sonia" nearly every moment of his waking hours. All morning they worked together; at table he sat next to her, and, once or twice, when she was in bed, he wheedled her into having his dinner sent upstairs on the tray with hers. In the afternoon, if it was pleasant, they strolled together along the boardwalk, or whirled down Atlantic Avenue in a jitney to their favorite moving-picture theater. All evening, if they did not go again to the theater, Mrs. G. talked eloquently, ostensibly to the teachers, but in reality for the benefit of Albert. Sunday they sat on the brown mission settee with a litter of newspapers around them, and all day she explained the news to him, paragraph by paragraph, in her endeavor to make the boy, who a year ago had not understood a printed account of a ball game, comprehend such subtle diplomatic moves as Britain's stroke to hold her Mohammedan subjects by setting up a rival Caliphate in Egypt. As they read, she filled him with all her prejudice against Germany, England, and President Wilson, all her admiration for France, Russia, and gallant Belgium.

Although she wanted Albert perpetually at her side, she was never quite happy to be alone with him. To fill her cup of pleasure to the brim, she must be able to display his adoration before an appreciative audience. It was not her way to consult the inclination of others. Whether or not it pleased us, we were required to sit through weary sessions of newspaper reading, to watch innumerable moving-picture films while she explained to the boy every detail of the plot, to eat countless undesired dishes of ice cream or seafood suppers,—all because it pleased her "baby child." If, by a rare chance, Albert had gone to bed, or for a welcome moment was

out of sight, we were allowed to talk only of him, of the tragedy of his unappreciative family, of the *naïve* sweetness of his character, of what he had learned, and most of all, of the purely childlike quality of his devotion to her.

That spring Mrs. G. had taken extraordinary care in choosing her costumes and Albert's. One afternoon in particular stands out. The two of them came up the boardwalk, illuminated by the bright glare of the May sunlight thrown back from the blue stretch of ocean. She was in immaculate white, her blouse of fine figured lawn, daintily tucked, and ruffled about the wrists and throat. She wore a little close hat of cerise, rimmed with tiny roses, and carried a parasol that gleamed cherry red in the sunshine. Albert, in a well-cut blue Norfolk suit, and a new straw hat, the nineteenth which had been tried on him in the London Shop, hung over her with an air of infatuated absorption. She looked very young, there in the light and the gay color, and he all of twenty-five. Together, they seemed as gay as the sunlight and the blue sea.

But Albert liked her best in a very different gown—one of heavy black taffeta with a wide, lustrous stripe of black satin. It fell from the waist line in a long, full overskirt which swung far out behind as she walked. Her plump white arms showed to the shoulder through soft, full sleeves of transparent black chiffon. In this gown she was, at once, dignified, demure, provocative.

All Albert's Oriental sensuousness rose in full tide to meet the appeal of her luxuriant physical attraction. In the midst of a meal, the boy would spring from his chair, and indulge in the most extravagant demonstrations of affection. She would put him aside weakly with a "There, there, child!", and then give in to his plea, "I can't help it, Baby, you are so beautiful!"

Such passionate demonstrations made even Mrs. G. pause. The "baby child" was making love to her. She knew that it must be stopped, yet it was precisely such emotional dissipation that made life interesting to her. Because she did not wish to stop it, she professed that she could not. She who held him in the hollow of her hand, she who, when her dynamic will was roused, could create in him a new behavior, a new mind, and new emotions, now for the first time admitted herself powerless.

By much voluble protestation, she endeavored to convince herself and others, that the boy did not know his affection was other than filial. She declared that it would be a crime to wake him rudely; that he believed his demonstrative caresses to be those of a child. Yet it seemed she must be aware of how specious were the premises on which she based this conclusion she so much desired,

Albert, the chubby youngster in knickerbockers who had come to us eighteen months before, was square and clean, yet not unsophisticated.

At the end of June, when they came up from Atlantic City, the wave of their emotion was so high that it was bound to break. Through the nine months since October, the nervous tension had waxed tauter and tauter. It snapped at last in Mrs. G., her tremendous physique unable to stand the strain she had put upon it.

At first, for a fortnight, she was in a private hospital in the city. There, in the violent reaction of a nervous breakdown, she blamed Albert for being the cause of her collapse, and refused to speak to him on the telephone or to see him. She even expressed the hope that no one else would waste time and strength in teaching him, since it was totally unappreciated. After a brief and partial reconciliation she left for two months' recuperation in the mountains.

For perhaps two weeks, or a little longer, Albert went about in a state of the deepest despair, mourning, in pallor and gloom, for his "beautiful Baby." Then he ceased to speak of her and settled down to work quietly and happily.

Miss M., who taught him with as much interest and devotion as Mrs. G. and with more quietness, found him capable of doing work such as is assigned to twelve or thirteen-year-old children. This precisely correlated with his performance level as indicated by the Binet Test, the Ayres Spelling Scale, the Courtis Arithmetic Tests, and the Trabue Language Scale A. His formboard index (19 sec.) was slightly below this level, and the Witmer cylinders (50 sec.) possibly above. In the previous summer his level of performance in school work was only that of an eight or nine-year-old boy.

Miss M. worked with Albert chiefly on arithmetic, composition, and grammar. In June, Mrs. G. had made a strenuous and nearly futile attempt to teach him arithmetic, particularly decimals. She counted in some foreign tongue—Swedish, Finnish, Russian—or whatever was her native language, and insisted on various foreign devices such as writing the digits after the decimal point in smaller figures than those before. She found it difficult to translate her work into English, and the strange new devices she forced upon him naturally confused the boy.

With Miss M.'s lucid teaching, and with the very genuine accession of mental ability that had come to him in the preceding twelve months, Albert advanced rapidly in arithmetic. In September, 1915, Miss M. stated (and her word is to be relied upon): "He has had review of problems in fundamental operations, and at the

present time seldom fails in problems of this kind. He knows fractions, decimals, percentage, profit and loss, commission, and simple interest fairly well. He has not had the 6-per-cent method or any short cuts. He has not had much oral work." Of language, she stated at the same time: "He can diagram sentences very well, can analyze sentences, does paraphrasing but finds it rather difficult, reproduces stories about famous characters in history, such as Joan of Arc, and Cyrus of Persia, and shows great improvement in English when asked to describe something."

Probably the two months that Albert worked with Miss M. were the quietest, happiest, and most normal, of all the twenty-one that he was with us. He could count on her interest, affection, and justice, and, in the now tranquil house, was able to use the increased ability to concentrate, and the new image complexes which he had gained through the year. He never made the super-human effort to learn which had enabled him to touch the impossible in his work for Mrs. G., but his progress was steadier and more normal. His constitution, too, splendidly young and strong, had stood the strain which undermined Mrs. G.'s extraordinary physique.

Miss B. and Dr. Witmer together, by their careful diagnostic teaching, had laid the foundation of Albert's progress. At the end, Miss M. had rounded out the work. With their aid Mrs. G. had almost touched her goal. In October, Albert was to enter the eighth grade of an eastern boys' school of good standing. In one year, he had been lifted approximately four years on the education scale, and had made an even more conspicuous rise on the civilization scale. He still hovered amongst the dubiates, around the threshold of social sufficiency, but Mrs. G., by the sheer force of her catclysmic personality, had raised him to that threshold. Albert was neither very intelligent nor very proficient; it was doubtful whether he could last even through the first year of high school. Failure in high school is not, however, an indisputable indication of imbecility. If he could control his "freshness," and his nervous, flustered behaviour, Albert, with his handsome features, his dancing, and the veneer of social polish, would be "sufficient" in *nouveau riche* Jewish society. In the business career his father designed for him, he would almost certainly fail, quite as much from lack of conformity, because he was scatter-brained, and unable to apply himself, as from inferior ability; but in a more modest position, he could undoubtedly earn at least a meager livelihood.

Morally, he emerged from the emotional experience, still fundamentally honest, clean, and square. His ideas of truth and temperance were a little less fine because of his contact with her; his ideals

of life lifted a little above the sordid money bags. How far her abnormal emotional stimulation had established in him a dangerous psychosis, or how far it served as a katharsis for the over-developed sex-consciousness he displayed when he first came to us, only the years of his life may reveal.

It would, indeed, require a fine adjustment of the scales to measure whether those twenty-one months counted for good or for ill in the boy's life.

The story of Albert as we know it has been told in so far as it touched him vitally. There was, however, in the last of September, before he left for his new school, another brief fortnight with Mrs. G.

Their devotion to each other appeared to be as deep as ever, but quieter, less conspicuously demonstrative, and tinged with a certain seriousness by the thought of their approaching separation. That separation brought more real grief to Mrs. G. than it did to the boy. On the last evening, however, he declared that he could not be away from "Sonia" for a single precious moment.

The next morning, he left. Mrs. G. went with him half way to New York. She wore her lustrous black gown, and a broad-winged hat of black illusion. Her face, since her illness, was thinner, more delicate; and her clear, dark blue eyes softened to a singular gentleness. Never had she seemed so pretty, so illusive, so instinct with womanly charm.

As to the handsome, dark-eyed boy, well-groomed, frank and courteous in his farewell, it was difficult to realize that, not two years before, he had come into our house, a "fresh," unkempt, overfed youngster squeezed into shabby tweed knickerbockers and a Buster Brown collar. There had been little peace in that house since he came into it, but we saw him drive away that late September morning, with genuine regret, for, withal that he had tormented us, he had won our affection, by the quality of his boyish spirit.

Nine months later, Albert wrote to Dr. Witmer from his new school:

MY DEAR DR. WITMER:—

I feel highly honored to receive your kind letter which I assure you was appreciated.

It certainly was extremely nice of Mr. D. to deliver my message. . . . I did not know he was from the "red and blue" until it was announced at the close of supper. . . . He said he knew you quite well and from then on, he was a good friend of mine. We made an agreement to see each other at the close of the Y. M. C. A. I have only missed one of these meetings, that I could possibly attend throughout the year. I do this because I want to follow the right track. Dr. Witmer, I must confess to you that you have practically saved my life.

What I mean by this is, that if I had never gone to your wonderful little school and gotten acquainted with your enthusiastic faculty I know my progress would have been fatal. I would have then turned out to be—well, you know the rest. Yes, Dr. Witmer, I can readily recall those hot summer days when you, with the aid of Miss B., tried to penetrate those simple examples into my mind. I remember when you tried your utmost to teach me the definitions of such words as “obtain” and “retain.” I also recall the prose (at the end of each spelling lesson), which was given to me to learn by memory. It was considered good if I learnt about two lines per hour. I cannot see how you could stand it! Anyhow you put me on the right track which I thank you many times over for. In this case, “thank,” is a very mild word. . . .

Tomorrow we play Penn Freshmen base-ball here. I won't use so much “lung power” if I might call it so, as I have done in the previous games. I can't say anything against Pennsylvania. I remember when I used to talk about nothing except “New York.” That was nothing except my darn conceit. Please excuse the slang. Miss B. taught me what conceit was. I mean the definition. Here's the way it went: “Conceit is having a high opinion of one's self,” said Miss B. “What does it mean?” asked Miss B. What does what mean? was my silly question. Why conceit, she said. Oh! conceit? “Why it means—let's take a bicycle ride this afternoon and see if we can beat our—” “You are the worst boy I have ever taught, etc.” Well, Miss B. is honest. I wonder if she would think that of me this day. . . . I remember, and will never forget (as well as I know I will be seventeen in eleven minutes and one second) the school with the various people and environment.

I have been working hard at my studies all day so that I will have more success in my final exams which are given within two weeks. I am most unfortunate in my exams. They are what bring my monthly marks down. Thank goodness that the monthly exams only count one third of the final mark. The lowest mark I have had in any subject this year was 65 per cent. I am glad that I will be in high school next year. It was a hard battle to get there. . . .

Do take good care of yourself and don't work too hard. Please give my best wishes to all, keeping a very large share for yourself. Do not write me except at your convenience. Again, Dr. Witmer, I thank you for all you have done.

I am, as ever, your good friend,

ALBERT.

About the same time, in May, 1916, Dr. Witmer received the following letter from an instructor in the school Albert was then attending:

*Dr. Lightner Witmer,
University of Pennsylvania,
Philadelphia, Pa.*

DEAR DR. WITMER:—

I am very glad indeed to give you my opinion of Albert, and also an idea as to his school work here.

Albert has told me of being with you and has often spoken very highly of you and your school. This noon he was very happy when he came and showed me a letter he had received from you.

Albert's actions are not normal, and he is the butt for the jokes of the boys. . . . He will probably pass most of his grammar school work this year, but it is doubtful if he will last in the third form (which corresponds to the fresh-

man year in high school) next year. It may be of interest to note that the man in charge of the lower school told me today that Albert has, in his opinion, almost reached his limit in school work but will probably make a successful business man. This from a Yale Phi Beta Kappa man with several years teaching experience. . . .

In March, 1917, ten months after the two letters quoted above were received, Albert wrote again, a letter not as perfect as the first in its penmanship.

MY DEAR MISS S.:—

Even though I have not had much of a chance to write you today, I made up my mind to at least start a letter.

Yes, I received your very nice letter and I am ashamed of myself for not having answered it before now. . . . I have been working, and hard, too.

Maybe you wonder why it is I have been so busy? Well I am an awful "bonehead" as they call it, in my studies, and I am making a big effort to succeed so far as an education is concerned. I spend more time on my work than any boy that I know does but still many show better results. Yet, there are some that are worse than I am. . . . I wish somehow I could be classified where I belong, but the chances are very slim. I am taking four subjects not including Bible. They are: Algebra, English, History, and Latin. The two latter are my hardest. I certainly agree with Mrs. W. that Latin should be abolished. . . . We completed our term's work about a week ago and then I was passing in everything. After the exams I only passed in two subjects, Math and English. I get very nervous during exam time and those marks never fail to be a menace to me. Bible, I have not found difficult, but let me tell you a secret. I have never studied a lesson and I got away with 85 per cent average for this year. . . .

What do you think about the war? It certainly is fierce. From the little I see of the papers we are bound to have a part in this conflict. . . . To be frank with you, I am not anxious to go to war, but if they need me, and I have my father's consent I will make also a good target for the Germans. As I suppose you know, Dad is a German and I really wouldn't want to fight against a country from which a very close kinsman as he was born. Secondly, I am the only son and Father has been waiting for me to get the education and experience so that he can place part of his business in my hands, confidentially. My third reason is that I haven't the heart to kill people, especially in a bayonette fight. Maybe if I were over there I should feel different. There is a big possibility of being killed and I suppose it would bring more sorrow than Father could stand. What's more, my greatest ambition is to make good. I will be eighteen in May, and if more men are called, I will fight for America.

No, by no means have I forgotten my dear friends over in Pennsy. . . . Do the children pass much time at the Pastime Theater or have they in past times? How is H. getting on, and all the rest of my companions, or "socii" as we call them in Latin? Just displaying some of my brilliancy! I often think of the children and the nice times we spent together. Don't be surprised if you see me some day, on a visit up at the old school once more.

Might as well close now before the sun rises (son if you prefer).

Good luck!

Your sincere friend,

ALBERT.

THE PHENOMENON OF SCATTERING IN THE BINET-SIMON SCALE.

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It has been said that feeble-minded children are more uneven in their intellectual development than normal children. According to Binet and Simon¹ "a defective child does not resemble in any way a normal one whose development has been retarded or arrested. He is inferior, not in degree, but in kind. The retardation of his development has not been uniform. Obstructed in one direction his development has progressed in others. . . . So far as certain faculties are concerned, he remains at the level of a younger child; but in respect to others, he is on a level with normal children of his own age. An unequal and imperfect development is consequently his specific characteristic. These inequalities of development may vary to any degree in different subjects. They always produce a want of equilibrium, and this want is the differentiating attribute of the defective." The difference between the feeble-minded and the normal is qualitative rather than quantitative.

We assume it is on the basis of these sweeping generalizations, which, we are led to conclude, represent merely the personal opinion of the authors as no supporting facts are adduced, that the conclusion has been drawn that the feeble-minded "scatter" more in the Binet-Simon scale than do normal children, *i. e.* they fail on more tests in lower age levels while passing more tests in various age levels above the basal age than do the normals. This alleged fact has almost been given the significance of a pathognomonic sign by which we are able to identify those who are "potentially feeble-minded," and by which we are thus enabled to make an early prognosis of feeble-mindedness in the case of doubtful children who "scatter" considerably, but who cannot be diagnosed as feeble-minded on the basis of the degree of mental deficiency which they evince. Thus we find Doll² affirming that "In general a normal child develops intellectually more consistently than a potential defective. The component mental processes which determine the intellectual capacity develop uniformly in the former and not so

¹ *Mentally Defective Children*, 1914, p. 13.

² *Preliminary Note on the Diagnosis of Potential Feeble-mindedness, Training School Bulletin*, 1916, May.

uniformly in mental defectives. In the Binet tests the typical normal child has a basal year not more than one year below his chronological age and passes but a few tests beyond his chronological age. The potential feeble-minded, on the other hand, has the basal year more than one year below the chronological age or at least seriously below the total mental age rating and may have more than one basal year, that is to say, he 'scatters,' failing in tests one would expect a normal child of that age to pass, and succeeding in others not expected. Thus a normal child 'testing' 8 may have a basal year of 7 and pass 3 tests at 8 and 2 at 9, whereas the potential feeble-minded 'testing' 8 may have a basal year of 5, pass 4 tests at 6, 4 at 7, 3 at 8, 2 at 9, and 2 at 10. The normal child thus tests 7.⁵ and the potential feeble-minded 5.¹⁵, the total rating in each case being 8. This brings us to a second premise, namely, that although the individual Binet tests at any age are of equal difficulty for normal children, they are of somewhat unequal difficulty for mental defectives."

It is evident that if unevenness in a child's mental development, as indicated by scattering on the Binet-Simon scale, is an indication of potential or actual feeble-mindedness, it is worth while determining whether feeble-minded children do, in point of fact, "scatter" more than normal children. We do not know that any one has thus far presented any experimental data in support of the correctness of this hypothesis. Doll's conclusions are admittedly tentative: "It is at present only a result of observation that such differences do exist and experiment has too often demonstrated that observation is mistaken." We have ourselves already called attention to the extensive scattering on the Binet-Simon scale by epileptics (which we noted as early as 1910) and by insane subjects.¹ From our data which have thus far appeared in print it has not been possible to determine the extent of the excess of scattering found among the epileptics and the insane as compared with other classes of persons. During the last eight years we have occasionally noticed that some feeble-minded subjects scatter very widely on the Binet-Simon scale, while other feeble-minded subjects scatter very little. We, however, deemed it inadvisable to attempt to compile definite figures until we had a considerable accumulation of data available. We now have records for thousands of subjects whom we have personally examined and diagnosed (with the aid of coöperating physicians), but, owing to the lack of time to work up all our records

¹ Experimental Studies of Mental Defectives, 1912, p. 22. Problems of Subnormality, 1917, p. 161f. The Individual Tests in the Binet-Simon Scale, *The Psychol. Clinic*, 1917, p. 79. Wide Range versus Narrow Range Binet-Simon Testing, *Journal of Delinquency*, 1917, 315f.

(and the unfortunate circumstance that nearly a thousand of our records are not now accessible to us), we are obliged to limit this study to 840 consecutive¹ cases examined in the Psycho-Educational Clinic conducted by the Board of Education in the City of St. Louis. These cases were diagnosed as follows: normal, 5.5 per cent; retarded, 7.9 per cent; backward, 38 per cent; borderline, 12.5 per cent; deferred, 6.4 per cent; and feeble-minded, 29.4 per cent (morons, 17.1 per cent and imbeciles 12.2 per cent). The average chronological age of the boys was 11.10 years; of the girls, 10.87; and of both sexes, 11.07.

RESULTS.

Table I shows the number of advance points which were earned by the pupils in the different classifications. The results differ somewhat according as we follow the 1908 scale or 1911 (Vineland) scale. Turning to the 1908 averages for the two sexes, we find that the smallest number of advance points were won by the pupils designated as normal, followed by the borderline and backward, who earned the same number of points, while the highest number of points were earned by the "deferred" cases (*i. e.* the diagnosis was deferred because the classification was uncertain) and the morons. The same number of points were earned by the retarded and the imbecile children. The greatest difference in the number of advance points earned is between the normal and the deferred, amounting to .58 of a year. Exclusive of these two categories the greatest difference amounts to one-fifth of a year, or only one point. The difference between the four of the seven categories which show the smallest differences varies from 0 to .04 of a year, an insignificant amount.

The smallest number of advance points among the boys, 1908 scale, was earned by the normal cases, followed by the retarded and backward whose averages are the same; and among the girls, by the normal, followed by the borderline. The greatest number of advance points among the boys were earned by the deferred, followed by the morons (the borderline and the imbeciles earned the same number of points); and among the girls, by the deferred, followed by the retarded and morons, who earned equally many points. The greatest difference among the boys amounted to .46 of a year, and among the girls .86 of a year, in both cases between the normal and the deferred. Exclusive of the two extreme categories, the greatest difference amounts to .18 of a year among the boys

¹ The exceptions to this statement have been noted in "Wide Range versus Narrow Range Binet-Simon Testing," *Journal of Delinquency*, 1917, p. 315f, which should be consulted for other facts which we do not repeat here. The subjects here considered are those included in "Group I" in that article.

and .34 of a year among the girls. The normals earned the fewest and the deferred the greatest number of advance credits among both the boys and the girls. The difference between the categories seems to be slightly larger among the girls than among the boys.

TABLE I.—ADVANCE POINTS EARNED ACCORDING TO THE 1908 AND 1911 SCALES.

	Boys			Girls			Both				
	No.	1908 Points	1911 Points	No.	1908 Points	1911 Points	No.	1908 Points	1911 Points	1908 Years	1911 Years
Normal.....	37	4.1	8.0	10	2.9	7.3	47	3.8	7.8	.76	1.56
Retarded.....	53	4.5	7.0	14	6.5	6.0	67	5.0	6.8	1.00	1.36
Backward.....	246	4.5	7.3	74	6.0	7.0	320	4.8	7.2	.96	1.44
Deferred.....	35	6.4	7.1	19	7.2	6.8	54	6.7	7.0	1.34	1.40
Borderline.....	81	4.8	6.9	24	4.8	6.6	105	4.8	6.8	.96	1.36
Morons.....	93	5.4	6.5	51	6.5	6.2	144	5.8	6.3	1.16	1.36
Imbeciles.....	59	4.8	6.8	44	5.3	6.2	103	5.0	6.5	1.00	1.30

To convert the advance credits in points to advance credits in years multiply the points by .2. This has been done in the last two columns for the two sexes.

The figures for the points represent averages.

Turning to the 1911 scale, averages for both sexes, the smallest number of advance points were earned by the morons, followed by the imbeciles, while the greatest number were earned by the normal, followed by the backward. The same number of points were earned by the retarded and borderline. The greatest difference in the number of advance points earned is between the normal and borderline, amounting to .30 of a year. Exclusive of these two categories the greatest difference amounts to only .14 of a year, while the difference between those four of the seven categories which show the smallest difference varies from 0 to .10—differences which, in either case, are rather negligible.

For the boys, 1911 scale, the smallest scattering is among the morons, followed by the imbeciles; and for the girls, among the retarded, followed by the morons and imbeciles, whose averages are the same. The greatest scattering for both the boys and the girls is among the normals, followed by the backward. (The scattering is the same among the girl morons and imbeciles.) The result for the two sexes are in complete agreement with respect to the groups which scatter most, but in less close agreement with respect to the groups which scatter least. The extreme difference among the boys amounts to .30 of a year, between the normal and the

morons; and among the girls, .26, between the normal and the retarded. Exclusive of the two extreme categories, the greatest difference amounts to only .10 of a year for the boys and .16 of a year for the girls. With the 1911 scale the difference between the boys and the girls is not significant, while with the 1908 scale the variation between the categories was slightly greater for the girls. The difference between the different categories is greater with the 1908 than with the 1911 scale for both the boys and the girls.

It is apparent that the two scales yield discrepant results so far as the mean tendencies are concerned. According to the 1908 scale it is the deferred and the morons, but according to the 1911 scale the normal and the backward subjects who scatter most, while according to the 1908 scale, it is the normal, the borderline, and the backward, and according to the 1911 scale the morons and the imbeciles, who scatter least. The difference between the extreme categories is greater with the 1908 scale than with the 1911 scale, but the differences are not very pronounced with either scale.

In order to lessen the number of categories, which may bring out more clearly the alleged tendency of the feeble-minded or subnormal to scatter more extensively than the normal, we have reclassified the subjects in table II into three groups. The "normal" group comprises the backward and the retarded, who are certainly not feeble-minded, as well as those who were technically classified as "normal" in table I. The subnormal group includes the borderline, deferred, morons, and imbeciles, all clearly below normal, while the feeble-minded group is limited to those who have been classified as morons and imbeciles.

Based on the averages for the two sexes the greatest scattering occurs among the normals and the least among the feeble-minded, when using the 1911 scale. But the difference amounts to only .16 of a year. The difference between the normal and the subnormal categories is greater (.12 of a year) than the difference between the subnormal and the feeble-minded (.04). On the other hand, when using the 1908 scale the scattering is least among the normals, while it is the same among the subnormal and the feeble-minded. The extreme difference, again, amounts to only .16 of a year.

With the 1908 scale the least scattering for both the boys and the girls occurs among the normals. The scattering is the same among the subnormal and feeble-minded for the boys, but it is slightly greater among the subnormal than among the feeble-minded for the girls. The greatest difference among the boys amounts to only .14 of a year, and among the girls to only .04 of a year.

TABLE II.—ADVANCE POINTS EARNED ACCORDING TO THE 1908 AND 1911 SCALES.

	BOYS					GIRLS					BOTH SEXES				
	No.	1908		1911		No.	1908		1911		No.	1908		1911	
		Pts.	Yrs.	Pts.	Yrs.		Pts.	Yrs.	Pts.	Yrs.		Pts.	Yrs.	Pts.	Yrs.
Normal (including "backward," "retarded," and "normal").....	336	4.5	.9	7.3	1.46	98	5.8	1.16	6.9	1.38	434	4.7	.94	7.2	1.44
Subnormal (including "morons," "imbeciles," "borderline" and "deferred").....	268	5.2	1.04	6.8	1.36	138	5.9	1.18	6.8	1.26	406	5.5	1.10	6.6	1.32
Feeble-minded (including "morons" and "imbeciles")	152	5.2	1.04	6.6	1.32	95	6.0	1.20	6.2	1.24	247	5.5	1.10	6.4	1.28

The figures for the points and years are averages.

With the 1911 scale, the scattering is the smallest among the feeble-minded and the greatest among the normals for both the boys and the girls. The greatest difference among both the boys and the girls amounts to only .14 of a year.

The above data are based on the averages—the average number of advance points gained by the average child in each classification. As is well known, however, the average sometimes obscures the real nature of the phenomenon under investigation. It tells us nothing respecting the frequency or distribution of the different scores or measures. It is therefore desirable to present the data in the form of a table of frequencies. Table III shows the number of subjects in each classification who earned from no advance point to 18 advance points. It is possible to determine from this table the proportion of subjects in any classification who earned one, two, three, four, or any other given number of advance points.

A casual inspection of table III shows that as many as 16 advance points were scored by individual normal, backward and "deferred" subjects with the use of the 1908 scale, while with the use of the 1911 scale one backward subject earned 18 advance points, and one moron 17 advance points. The figures in this table, as arranged, however, are quite unwieldy. In order to throw the outstanding facts into bolder perspective, we give in table IV the percentage of the subjects in each classification who earned less than six advance points (*i. e.* 5 or less), less than eleven points (*i. e.* 10 or less), more than ten points (*i. e.* 11 or more), and from six to ten points, inclusive. The percentages have been computed only in round numbers.

We again find certain discrepancies between the 1908 and 1911 scales. According to the 1908 scale the proportion of subjects

TABLE III.—DISTRIBUTION OF ADVANCE POINTS EARNED BY SUBJECTS IN DIFFERENT CLASSIFICATIONS.

Points	ACCORDING TO THE 1908 SCALE																							
	NORMAL			RETARDED			BACKWARD			DEFERRED			BORDERLINE			MORONS			IMBECILES					
	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both			
0	4		4	4		4	13	4	17				4	2	6	1		1	2	1	3			
1	9	2	11	8	1	9	24	4	28	1		1	3	2	5	7	4	11		5				
2	5	3	8	7		7	30	8	38	3	3	6	11	4	15	7	4	11	6	4	10			
3	2	2	4	5	2	7	22	12	34	3		3	18	4	22	10	3	13	12	4	16			
4	4	2	6	6	1	7	44	3	47	4	1	5	5		5	13	9	22	15	3	18			
5	2		2	6	1	7	37	2	39	5	1	6	7	5	12	8	2	10	4	8	12			
6	3		3	2	2	4	24	10	34	3	3	6	7	1	8	11	8	19	3	3	6			
7	1	1	2	5	3	8	18	6	24	2	4	6	10	1	11	14	5	19	5	3	8			
8	1		1	2	1	3	11	5	16	6	2	8	4		4	9	1	10	5	3	8			
9	1		1	2	1	3	8	6	14	2	1	3	7	2	9	1	2	3	6	4	10			
10	1		1	2		2	6	3	9	1	1	2	2		2	3	2	5	1	5	6			
11	2		2	1		1	3	3	6	2	1	3	2		2	2	3	5		1	1			
12				1	1	2	4	1	5	1		1	1	1	2	4	4	8						
13	1		1	1		1	1	3	4					2	2	1	2	3						
14					1	1	1	1	2	2		2				2	1	3						
15				1		1		2	2		1	1					1	1						
16	1		1					1	1		1	1												

ACCORDING TO THE 1911 SCALE																								
0				1		1	1	1	2								1	1		2	2			
1	1		1		1	1	6	1	7	1		1				2	1	3		1	1			
2	1		1		2	2	10	5	15	1	1	2	2		2	4	3	7	4	3	7			
3	1	2	3	5	1	6	18	2	20	2	1	3	3	1	4	3	5	8	6	1	7			
4	4		4	6	2	8	16	3	19	5	2	8	6	3	9	19	6	25		9	9			
5	2		2	8	2	10	23	9	32	4	1	5	11	7	18	8	5	13	6	3	9			
6	5	2	7	6	1	7	35	9	44	1	4	5	14	3	17	13	7	20	12	6	18			
7	3	1	4	3	1	4	28	7	35	1	2	3	16	3	19	13	7	20	6	3	9			
8	7		7	5	1	6	25	13	38	6	3	9	8	2	10	7	7	14	9	5	14			
9	3	3	6	6	1	7	17	11	28	5	1	6	10	2	12	11	3	14	6	2	8			
10	1	1	2	5		5	23	7	30	3	3	6	6	2	8	7	1	8	6	3	9			
11	2	1	3	4		4	12	2	14	2		2	2		2	4	3	7		4	4			
12				3	1	4	13	2	15	1	1	2	2		2				4	2	6			
13	2		2				10	1	11	1		1	1		1		1	1						
14	2		2				4		4							1		1						
15	3		3				3	1	4	1		1		1	1									
16				1	1	2	1		1								1	1						
17																1		1						
18							1		1															

who passed the greatest number of advance tests (*i. e.* more than 10 each), was greatest for the deferred subjects and the morons, and least for the imbeciles and borderline. On the other hand, the proportion of subjects who were able to pass only five advance tests or less, was greatest for the normal and backward (followed closely by the imbeciles, borderline and retarded), and least for the deferred and morons. These results are fairly consistent with those based on the averages for the 1908 scale given on p. 181.

According to the 1911 scale, the proportion of subjects, each of whom passed more than 10 tests, was greatest among the normal and backward (followed closely by the retarded), and least among the borderline and morons (followed closely by the imbeciles). On the other hand, the proportion of subjects among those who were able to pass only five advance tests or less, was greatest for the retarded and morons (followed closely by the deferred and imbeciles), and least for the normal and backward. These results, again, are fairly consistent with the results based on the averages for the 1911 scale given on pp. 182-3.

TABLE IV.—PERCENTAGES OF SUBJECTS EARNING NUMBER OF ADVANCE POINTS AS INDICATED.

	1908 SCALE				1911 SCALE			
	Less than 6 Points	Less than 11 Points	More than 10 Points	From 6 to 10 Points	Less than 6 Points	Less than 11 Points	More than 10 Points	From 6 to 10 Points
Normal.....	74	91	8	17	23	78	21	55
Retarded.....	61	91	8	30	41	85	14	43
Backward.....	63	93	6	30	29	84	15	54
Deferred.....	38	85	14	46	35	88	11	53
Borderline.....	61	94	5	32	31	94	5	62
Morons.....	47	86	13	39	39	92	7	52
Imbeciles.....	62	99	0.9	37	34	90	9	56

The difference between the group which showed the highest percentage who passed more than ten advance tests and the group which showed the lowest percentage was 13.1 per cent with the 1908 scale and 16 per cent with the 1911 scale.

According to the 1908 scale the proportion who passed less than 11 advance tests was greatest among the imbeciles and least among the deferred and morons, while according to the 1911 scale the proportion was greatest among the borderline and morons and

least among the normal and backward. The proportion of those who passed from 6 to 10 advance tests according to the 1908 scale was greatest among the deferred and morons (closely followed by the imbeciles), and least among the normal, retarded and backward; while according to the 1911 scale the ratio was greatest among the borderline and imbeciles (closely followed by the normals), and least among the retarded and morons.

It is evident, therefore, that the scattering according to the 1908 scale is greatest among the morons and deferred children, some of the latter of whom will probably later prove to be feeble-minded, and least among the imbeciles and the borderline, some in the later group being cases of so-called potential feeble-mindedness. On the other hand, the scattering according to the 1911 scale is greatest among the normal cases (specifically the "normal," "retarded" and "backward") and least among the mental defectives—i. e. the "borderline," "morons" and "imbeciles." Most of these results harmonize with those based on the analyses of the averages, pp. 181 to 184.

If we adhere to the assumption which is usually made that the 1911 scale is more accurate than the 1908 scale (we shall consider this assumption in a separate communication) we should have to conclude that a high degree of scattering is not symptomatic of either feeble-mindedness or potential feeble-mindedness. Owing to the lack of higher tests in the 1908 scale, we are probably justified in rejecting the results bearing on the limited amount of scattering among the normals when using this scale, as will appear from the analysis of the mental status of the normal cases by the 1908 scale, to be made presently.

The data we have tabulated permit us to make yet another comparison. In table V we give the average range of ages in which one or more tests were passed by the subjects in the different classification. The "range" for each subject includes all the ages between and including the basal age and the highest age in which at least one test was passed. It does not necessarily imply that one or more tests were passed in all the ages between the "basal" and the "highest" age, although this was usually the case. In the 1911 scale the "adult" age was rated for the sake of the computation as age 15, while the supposititious ages 13 and 14 were counted as two ages. In consequence of this arbitrary adjustment we count less ages than we would be entitled to do in the first case (since the adult age is assumed to be higher than Age XV, which is supplied in the scale), but more ages in the second case than actually exist in the scale when tests are passed in Age XV or the adult age. In

all cases except one, however, when a plus was scored in XV, a plus was also scored in the adult age. On the other hand, the absence of tests in Ages XIII and XIV makes it impossible for subjects to pass tests in those ages who would have done so had the tests been supplied. An earlier study has shown that so uneven is mental development that children will score passes not only among the easier but also among the more difficult of higher age tests.¹ We should also emphasize that the difference between the higher ages is, in general, smaller than the difference between the lower ages, while Age XV and the adult age are largely hypothetical. It is evident that the errors which arise from the above shortcomings affect particularly the older or more intelligent cases. Space limitations will restrict the comparisons to the averages for the two sexes.

TABLE V.—AVERAGE NUMBER OF AGES IN WHICH TESTS WERE PASSED.

	Boys		Girls		Both Sexes	
	1908	1911	1908	1911	1908	1911
Normal.....	2.7	4.1	2.5	4.0	2.6	4.1
Retarded.....	3.1	4.2	3.5	3.7	3.3	4.1
Backward.....	3.3	4.6	3.6	3.9	3.4	4.4
Deferred.....	3.6	4.2	3.8	3.7	3.8	4.1
Borderline.....	3.3	4.1	2.8	3.6	3.2	4.0
Morons.....	3.6	4.0	3.5	3.9	3.6	4.0
Imbeciles.....	3.5	4.0	3.7	3.8	3.6	3.9

According to the 1908 scale the lowest average range of ages in which tests were passed is found among the normal subjects, and the largest range among the deferred cases, followed closely by the morons and imbeciles. The difference between the normal and the deferred amounts to 1.2 of a year, while the maximum difference between the other classifications amounts to only .4 year. We cannot conclude from these data, however, that the scattering is confined to the smallest range of ages among the normals, for an examination of the unabridged tables, which are not here reproduced, shows that a large proportion of the normal subjects graded in the higher Binet ages—by which we refer to a base of X or above—while a merely negligible number of those in the three other classifications reached a X-year base. Forty-two per cent of the normals

¹ Wide Range versus Narrow Range Binet-Simon Testing, *Journal of Delinquency*, 1917, p. 815E.

had a base of from X to XIII,¹ while only 1.8 per cent (one case) of the deferred and 7.6 per cent (11 cases) of the morons reached a X-year base. The basal age for most of the deferred was below VI. None of the morons reached X except those with a X-year base. Only one imbecile reached a VII-year base and only two a VI-year base. It is clear, therefore, that the reason the passed tests did not scatter over a wider range of ages for the normal subjects is that almost half of them had such a high base that it was impossible to give them as many higher tests as could be given to the subjects in the other groups, owing to the lack of tests in ages above XIII and the relatively few tests available in ages XII and XIII—and the further fact that the tests in XII and XIII are admittedly too hard. That the normal subjects, in point of fact, were given fewer tests,² than the pupils in any other classification appears from table VI.

TABLE VI.—EXTENT OF ADVANCE TESTING BY THE 1908 SCALE.

	Average Number of Full Years Tested Above Basal Age ³			Average Number of Tests Given Above Basal Age		
	Boys	Girls	Both	Boys	Girls	Both
Normal.....	2.7	2.4	2.5	9.3	6.4	8.7
Retarded.....	3.0	2.6	2.9	11.1	13.5	11.6
Backward.....	2.5	3.0	2.9	11.0	14.4	12.1
Deferred.....	2.9	3.3	3.0	17.7	19.6	18.4
Borderline.....	3.0	3.2	3.0	13.5	13.1	13.4
Morons.....	3.1	3.1	3.1	15.2	16.4	15.6
Imbeciles.....	2.9	2.8	2.8	18.4	18.9	18.6

The average number of ages above the basal age in which all the tests were given was .3 less for the normals than for the imbeciles, who were given the next fewest number (we are using only the averages for the two sexes); and .6 less than for the morons, and .5 less than for the deferred and borderline, who were given the greatest number of complete ages. In the same way, the average number of single tests given to the normals above the basal age was 2.9 less than for the retarded subjects, and 3.4 less than for the

¹ Thirteen had a X-year base, 2 a XI-year, 3 a XII-year and 2 a XIII-year base.

² Sometimes due to this lack of higher tests in the scale, and sometimes due to the fact that the diagnosis did not present any difficulty, in consequence of which the examinations were occasionally curtailed because of the limited time at our disposal.

³ Only those ages are included here in which all the tests were given. Because of time limitations it was sometimes necessary to omit the longer tests in certain ages.

backward subjects. These three classes were given the fewest advance tests. On the other hand, the groups which were given the greatest number of advance tests, the imbeciles, deferred and morons, were given 9.9, 9.7 and 6.9 more tests, respectively, than the normals were given. From the standpoint of the extent of the advance testing, it would be natural to expect that the scattering should be the greatest among the imbeciles, deferred and morons, and least among the normals, retarded, and backward. We have already seen that this has proved largely to be the case. According to the 1908 scale, the highest average number of advance points were made by the deferred and morons, and the least by the normal, backward, and borderline, while the largest proportion of subjects who earned more than ten advance points was found, again, among the deferred and morons, while the smallest proportion was found among the imbeciles, borderline, and backward. The fact that the deferred cases and the morons pass the highest number of advance tests in the 1908 scale may thus be ascribed to the fact that they were more extensively tested rather than to the alleged fact that they vary more in their mental make up. It is to be noted, however, that the imbeciles, who were given the greatest number of advance tests, scattered over a less wide range than any other group in the 1908 scale—we are referring to those who passed more than ten advance tests—but the imbeciles are followed by the borderline group, which contains cases of potential mental deficiency. As a matter of fact, we have already shown by analysis of experimental data that the groups of subjects who have been extensively tested by the Binet-Simon tests invariably make a higher rating than those who have been less extensively tested.¹ This analysis, so far as it went, showed that "the amount of the credit earned depends upon the extent of the testing and not upon the grade of intelligence of the pupils."

Turning, finally, to the range of ages in which tests were passed in the 1911 scale (table V), the average is the lowest for the imbeciles, morons and borderline, and the highest for the backward, normal, retarded, and deferred. The difference between the extremes, the imbeciles and backward pupils, amounts to only .5 of a Binet age. Possibly the range is slightly exaggerated for the groups which passed tests in the adult age. The range extended to the adult age for 10 per cent of the normals, 14 per cent of the backward (who passed tests in most ages), 13 per cent of the retarded, and 4 per cent of the borderline, while the highest age in which the morons passed any test was XII, the deferred cases Age XI and the

¹ Wide Range versus Narrow Range Binet-Simon Testing, *Journal of Delinquency*, p. 315ff.

imbeciles Age X. Nevertheless, the results are in harmony with the findings for the 1911 scale, which we have already detailed: The imbeciles and the morons earned the lowest average number of advance credits, and the normal, backward, and deferred the highest average number, while the proportion who earned more than ten advance tests was the smallest for the borderline, morons, and imbeciles, and the largest for the normal, retarded, and backward.

CONCLUSIONS.

1. The facts revealed by the foregoing analysis do not support the supposition that feeble-minded children show more unevenness or greater variation in their mental development than do normal children. On the contrary the variation we have found among our normal children, as indicated by scattering on the Binet-Simon scale, is greater than the variation found among our feeble-minded children. We do not consider, however, that this difference is of any considerable significance. We believe that a considerable amount of variation (scattering) in the development of different mental functions is a perfectly normal or typical phenomenon among all classes of human beings. That is, some individuals in any group of individuals, whether so-called normal, abnormal or subnormal, will show a considerable amount of unevenness in the strength of different mental traits, while other individuals will be uniformly or evenly developed. Some normal persons will scatter much, others little. Some feeble-minded persons will scatter much, others little. Some insane persons will scatter much, others little. The data presented in this article indicate that the feeble-minded do not vary more than the normal, and, therefore, the assumption of Binet and Simon that "unequal" development is the "specific characteristic" of the mentally defective child is not justified.

Do the insane and the epileptic vary more than the feeble-minded and the normal? None of the original records of our survey of a village of epileptics is now available to the writer, so that an adequate comparison is impossible. But it was the extensive scattering found in our epileptic group of subjects on the Binet scale which first called our attention to this phenomenon. Only a part of our original records for the insane patients are available. These permit of adequate comparison with our normal and subnormal cases, but the conclusions drawn must be tentative, owing to the few insane records available.¹ The insane group was given more advance tests than our normal-subnormal group in all the ages permitting of comparison except one (no advance tests could, of course, be

¹ Cf. *Problems of Subnormality*, pp. 157-163.

given in either group to those who graded XIII).¹ The difference between the averages amounts to 10.6 tests in Age IV, 14.4 in VIII, 8.4 in IX, 1.8 in X, and 1.7 in XI—and 5.5 in II, the sole age in which more advance tests were given to the normal-subnormal group. In spite of this fact, the insane earned only 4.6 tests (average) above the upper base, which is .1 less than for our normal group, and .9 less than for our subnormal and feeble-minded groups in Table II. I do not believe, however, that we can accept these figures at their face value, owing to the fact that 28 per cent of the insane passed Age XIII, and therefore could not earn any advance credits, because of the limitation of the scale, while only .47 per cent of the normal-subnormal group passed Age XIII.² As a matter of fact, the average number of advance credits won by the insane patients who graded below X was 7.3 (median 6.5), which is somewhat higher than for any of the normal-subnormal classifications, while for those who graded X and above, it was only 2.2 (median 0), or 4.8 (median 2) if those grading Age XIII are excluded. Our general impression is that the scattering is slightly greater among the insane and the epileptic than among the normal and the feeble-minded. Binet and Simon,³ discussing senile and paralytic dementia, state that the old conception of dementia, according to which it is a "quantitative diminution of the intelligence" or "an injury of all the faculties," is wrong. They hold that we must replace this interpretation of dementia with the conception of "individual errors of functioning, of defects of every sort, which by their multiplication lower the intellectual level and which present the two following characteristics: irregularity and extensiveness relative to the level of the subjects." In our judgment more extensive data are needed to establish this thesis. It has not yet been experimentally demonstrated that the mental "irregularity" is so much more pronounced in demented than in other types of the insane or in the epileptic or feeble-minded that this phenomenon can be used as a pathognomonic sign of dementia. The amount of irregularity, as measured by Binet-Simon scattering, is not greater among the few demented than we have examined than among the feeble-minded.

2. In consequence of the above facts it is not safe to attempt to diagnose any one as potentially feeble-minded or actually feeble-minded on the basis of unevenness of mental development, as evinced by extensive scattering on the Binet scale. It is possible for an expert who is familiar with the entire symptom complex of

¹ Cf. Problems of Subnormality, p. 163; and Wide Range versus Narrow Range Binet-Simon Testing, *Journal of Delinquency*, 1917, Table I, p. 316.

² Table I, Wide Range versus Narrow Range Binet-Simon Testing, *Journal of Delinquency*, November, 1917.

³ Binet and Simon. The Intelligence of the Feeble-minded, p. 296.

special types of mental defectives to make a reliable diagnosis in the case of young children, even though the extent of the mental deficiency at the time is not sufficient to constitute the child feeble-minded. But the number of mental defectives who can be thus reliably diagnosed early as feeble-minded is probably smaller than has been ordinarily supposed. So far as the majority of cases are concerned we are not justified in making a diagnosis of feeble-mindedness, unless we find a pronounced degree of backwardness and unless we are reasonably sure of its permanent character. Feeble-mindedness, psychologically considered, means ineradicable arrest of mental development, dating from birth or from early life, of a very serious degree. This is of primary moment; whether or not the child is uneven in his mental development is of secondary importance.

3. The assumption that the essential difference between the feeble-minded and the normal is qualitative and not quantitative is not sustained, so far as that assumption is based on the alleged extensive "scattering" or unevenness of mental development among the feeble-minded. On the contrary, we believe that the qualitative differences are ultimately resolvable into quantitative differences. When it is said that the normal child has a logical memory and the feeble-minded child a rote memory it is not implied that the feeble-minded child is utterly devoid of logical memory, so that he is unable to memorize or retain through a comprehension of the logical context. He has logical memory, but far less of it than the normal child. What he has is probably of the same kind as the normal child, but it is weaker in degree.

4. There has been a tendency throughout this and other countries, to which we have called special attention elsewhere,¹ to assign so-called potential mental defectives to special classes which were definitely established for "mentally defective" or feeble-minded children on the assumption that such children would eventually prove to be feeble-minded. In consequence of this tendency, a large proportion of children who are dull, slow or backward, but not feeble-minded, have been assigned to classes instituted for, and largely attended by, feeble-minded children. We believe that this practice is educationally and socially unwise. The non-feeble-minded and doubtful types of mentally backward children should be assigned to ungraded classes, where the work can be more adequately adjusted to their needs. We have elsewhere outlined a plan for the organization of such classes, the practical workability

¹ *Problems of Subnormality*, 1917, Chapter I.

of which we have already demonstrated in some measure, in a large city system.¹

5. The assumption that there would be less scattering with the 1911 than with the 1908 scale, because of the alleged greater accuracy of the 1911 (Vineland) scale, is not sustained by our records. The scattering is invariably greater with the use of the 1911 scale in all the classifications in tables I and II, where the figures are based on the averages, the difference in some cases amounting to from two to four advance credits. The cases of extreme scattering (more than ten advance credits) are more numerous in the 1911 than in the 1908 scale, in all the categories, except the borderline, while the cases of least extensive scattering (less than 6 advance points) are decidedly more numerous in the 1908 than in the 1911 scale in all the classifications (table IV). The range of ages in which tests are passed is likewise greater with the 1911 than with the 1908 scale in all the classifications (table V). The advantage of the 1911 (Vineland) over the 1908 scale clearly does not consist in the lessened amount of scattering which obtains in the former scale, for the facts are exactly opposite.

The reason for the increased scattering with the 1911 scale, however, may be the more rigid passing standard used in this scale. All the tests of a given age standard must be passed to get credit for that age in the 1911 scale, while the age standard is passed in the 1908 scale even if one test is missed. The result is that the subject frequently drops to a lower base in the 1911 than in the 1908 scale, while it very rarely happens that the 1908 base is lower than the 1911 base. This is strikingly shown by the figures in table VII, which gives the percentage of subjects who have a lower base (*a*) by the 1911 scale than by the 1908 scale, (*b*) by the 1908 scale than by the 1911 scale, and (*c*) who have the same base in both scales. There are a few instances in each classification in which the 1908 base is lower than the 1911, but the highest ratio of cases in which this is so is only 7 per cent, based on the averages for the two sexes, namely, among the retarded children. On the other hand, the ratio of cases in which the 1911 base is lower than the 1908 varies from 39 per cent, among the deferred cases, to 70 per cent, among the normal cases. In five of the seven classifications the 1911 base is lower than the 1908 for more than half of the subjects. In two classifications the bases are the same for more than half of the subjects, while the percentage having equal bases in the other classifications varies from 27 to 45.

It is evident, from the above figures, that one reason, at least,

¹ *Problems of Subnormality*, 1917, pp. 278-331.

for the greater scattering in the 1911 scale is the more rigid passing standard which causes many of the subjects to drop to a lower base.

In other articles we shall compare the scattering in the 1911

TABLE VII.—PERCENTAGE OF SUBJECTS WHOSE 1911 BASE IS LOWER THAN THE 1908 BASE, WHOSE 1908 BASE IS LOWER THAN THE 1911 BASE, AND WHOSE 1911 AND 1908 BASES ARE THE SAME.

	1911 BASE LOWER			1908 BASE LOWER			1911 AND 1908 BASES EQUAL		
	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both
Normal.....	67	80	70	0	10	21	32	10	27
Retarded.....	60	35	55	7	7	7	32	57	27
Backward.....	61	45	57	1.6	2.7	1.8	37	52	40
Deferred.....	40	37	39	0	10	2.6	60	53	57
Borderline.....	54	50	52	1.2	0	1	44	50	45
Morons.....	40	43	41	2.2	6	4	56	51	54
Imbeciles.....	69	59	65	0	9	4	30	31	30

and 1908 scales when the subjects are classified according to Binet-Simon age, compute the differences in the mental-age rating by the two scales, and analyze the data for the individual tests. We also expect in future to study the scattering in another scale which we are now using. Thus far we have found just as much scattering in this revision as in the older versions.

NEWS AND COMMENT.

Universal Military Training.

The Universal Military Training League is working together with the Rotary Clubs of the country to secure the passage of the Chamberlain Bill at the coming session of Congress.

At a meeting of the state committees of the Medical Section, Council of National Defense, held in Chicago, October 23, 1917, the following resolutions were adopted unanimously by representatives of all the states except Maine and Delaware:

WHEREAS, The experience through which the United States is now passing should convince every thoughtful person of the necessity for the universal training of young men, not only for the national defense in case of need, but also to develop the nation's greatest asset—its young manhood—in physical strength, in mental alertness, and in respect for the obligations of citizenship essential in a democracy; therefore, be it

Resolved by the state committees of the Medical Section of the Council of National Defense that they strongly urge the adoption by our government at this time of a comprehensive plan of intensive universal military training of young men for a period of at least six months, upon arriving at the age of nineteen years; and that this body also support the movement to secure the introduction into public schools of adequate physical training and instruction;

Resolved, That the members of each state committee immediately take active steps to insure public support for the subject of these resolutions through the newspapers, through public meetings and through the appointment of committees in each county; also that copies of these resolutions be forwarded to the Senators and Members of Congress in their respective states, with a personal request that favorable action be taken at the coming session of Congress upon a measure following the principle of the Chamberlain Bill and to become operative as soon as the army cantonments are no longer required for the training of the forces in the present war;

Resolved, That each state committee from time to time report to the Medical Section of the Council of National Defense as to action taken and progress secured in their several states.

Two days later, on October 25, 1917, the Clinical Congress of Surgeons of North America, meeting in the same city, passed the following resolutions:

WHEREAS: The experiences of the nation convince us of the necessity for Universal Military Training, to furnish qualified men for defense, to strengthen manhood and mental poise, and to make for a more efficient citizenship, and

WHEREAS: We believe it will democratize youth and furnish discipline, while developing physical force and endurance, and will produce better fathers and workers for the ranks of peace; therefore, be it

Resolved, That the Clinical Congress of Surgeons at its eighth annual session urges upon Congress at its coming session the passage of a measure along the general lines of the Chamberlain Bill for Universal Military Training, and that the cantonments now used by the National Army be utilized, if possible, for such work.

Editorial Note on Clinic Reports.

Owing to the length of the first article in this number of *The Psychological Clinic*, it has been necessary to postpone until December the next instalment in the series of Clinic Reports.

The Psychological Clinic

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VOL. XI, No. 7

DECEMBER 15, 1917

A BRIEF BINET-SIMON SCALE.¹

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I.

Many studies have demonstrated the need for employing mental tests in the schools, the courts, the industries, the custodial and corrective institutions, even in the family itself, and in the military establishments of the country. These studies have pointed out that a radical readjustment of social and pedagogical theory and practise must be brought about on the basis of levels of intelligence. School administrators, sociologists, penologists, eugenists, and vocationalists must all consider mental defect and intellectual capacity as vital elements in their dealings with human material.

But how shall society effectively recognize and take advantage of the significance of intelligence, if the means of determining intellectual capacity remain the property of a small group of experts, whose working methods are far too laborious, too complex, and too time-consuming for the practical demands of every-day life? If applied psychology is to make its way in the world and become an instrument in human welfare, its working methods must become the property of the many and must be both refined and condensed. Efficiency is not incompatible with science.

The Binet-Simon Scale has been welcomed as one of the most valuable and economical devices for the practical measurement of intelligence. This scale is now available in many arrangements and for all intelligence levels, each particular arrangement possessing its own advantages and its own limitations. But although this scale has reduced mental measurement almost to rule-of-thumb procedures, it must be still further simplified and abbreviated before it can come within the widest ranges of practical utility. Its employment still requires too much time for administration and too high a degree of expert knowledge for the extensive uses to which such a scale might be put. If the Binet-Simon Scale, in any of its forms,

¹ The substance of sections I and III of this paper were presented in abstract before Section L of the American Association for the Advancement of Science under title of *A brief scale for rapid Binet-Simon examining*, at New York, December, 1916.

could be abbreviated without serious loss of efficiency as a measure of intelligence levels, there would indeed result a great gain for mental measurement and its many fields of application.

It has long been recognized that the individual tests of the Binet-Simon Scale do not present the same relative degrees of difficulty to feeble-minded children that they do to normal children of the same intelligence level. That is, while the individual tests are of approximately equal difficulty for normal subjects of a given age, some tests are characteristically difficult or characteristically easy for mental defectives of that mental age. One may assume, on this hypothesis, that if a scale were devised which employed only those tests which are hardest for defectives, the results from such a scale would tend to exaggerate mental retardation in mentally defective subjects but would leave the mental levels of normal subjects unaffected.¹ It would thus be possible to recognize feeble-mindedness more easily in rapid mental testing. On this hypothesis I have constructed an abbreviated Binet-Simon scale, made up of individual tests which have been experimentally selected as offering unusual difficulty for mental defectives. This relative difficulty was determined by standardizing the Binet-Simon tests differentially on a group of normal subjects and a group of feeble-minded subjects.

The experimental data on which this standardization is based consist of wide-range Binet-Simon tests (Goddard revision) of 88 selected normal children from the public school of Vineland, N. J., and 189 feeble-minded "children" from the Training School at Vineland, N. J. The test-records of the 88 public school children were selected from records obtained from 250 children by Miss Leila Martin. Two criteria of selection were used, namely, that the records should be complete wide-range tests (that is, should include all years of the scale), and that the children should be "pure" normals, as indicated by an I. Q. range of 90-110. Wide-range tests were necessary in order that the final percentages should be above the criticism of incomplete data; and only strictly normal children were used in order to avoid the excessive variation which is present in groups of unselected children. The number of normal children was relatively small, but this lack is offset by the homogeneity of the group and the completeness and accuracy of the data. This group of subjects was made up chiefly of American and Americanized Jewish and Italian children of ordinary social status. They ranged in life age from 5 to 10 years, and were in the proper school grades

¹ This hypothesis is developed and applied by Brigham, from whom I received the suggestion for turning my data to this account. Cf. Carl C. Brigham, *Two studies in mental tests*, Psychological Monographs, Vol. XXIV, No. 1, 1917. I am much indebted to Dr. Brigham for many suggestions in preparing this study. Unfortunately I have not had access to the monograph itself, and cannot therefore make specific acknowledgments to his results.

for their ages. The feeble-minded subjects included all inmates of the Training School whose mental ages were between 5 and 10 years. The average life age for each mental age group was approximately 20 years. The group represents a wide variety of clinical and pathological types of mental defectives. The tests were wide-range tests conducted by members of the research staff.¹

Table I shows the classification of data, with the percentages of successes for each test and each age-group. For more direct comparability of results all the normal subjects are classified by *mental* age groups. Normal age-group 5, for example, includes the normal subjects whose mental ages were from 5.0 to 5.8 inclusive. The Roman numerals in the table indicate the mental year in which each single test is located according to Goddard's arrangement.²

The successive columns show, from left to right, the age-groups, the number of cases in each group, the average mental age of the group, the average life age, the average intelligence quotient, and the percentage of passes for each successive test of the Goddard arrangement of the B-S Scale. The normal subjects are represented in the upper part of the table and the feeble-minded subjects in the lower part. The first line of the table reads: normal children, mental age group 5, 9 cases, average mental age 5.5, average life age 5.4, average I. Q. 101; 78 per cent of whom passed test V-1 (compare two weights), 56 per cent passed test V-2 (copy square), and so on. The percentages of passes have been analyzed carefully for influences of examiners' equation, sex differences, social status, nationality, life age, and previous acquaintance with the tests. This analysis was made after the method described by Brigham (see footnote p. 198). The influence of these factors proved to be greater than the experimental errors which arise from the chance selection of a comparatively small group of subjects.

The relative difficulty of each test of the scale as compared with every other test, and the differential difficulty of each test for normal subjects compared with the same test for the feeble-minded subjects was determined by summing the percentages of passes for all successive ages for each test, for each group of subjects. Many other statistical methods were employed for this same purpose, but having proved unsatisfactory their discussion is not pertinent to the present presentation of results. The relative merits of these different standardization criteria will be discussed elsewhere. For present purposes the total sum of percentages indicated in table I is the simplest method, and also yields the most satisfactory results.

¹ The statistical tabulation of results for these subjects was prepared for me by Miss Katherine Reese.

² For descriptive names of the tests consult Goddard's record blank. All subsequent references are based on this arrangement.

TABLE I.—PER CENTS OF PASSES ON INDIVIDUAL TESTS OF THE GODDARD BINET-SIMON SCALE, FOR NORMAL AND FEEBLEMINDED SUBJECTS.

88 NORMAL SUBJECTS										180 FEEBLEMINDED SUBJECTS																	
V					VI					VII					VIII												
Mental Age Group	No. of Cases	Av. Mental Age	Av. Life Age	Av. I. Q.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5			
					78	56	67	89	11	89	67	56	11	67	44	33	22	0	22	11	0	0	0	11	7	0	14
5	9	5.5	5.4	101	98	100	100	100	86	91	88	79	73	68	83	43	41	48	0	74	9	29	30	39			
6	14	6.4	6.2	103	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94	59	88	83			
7	23	7.3	7.4	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	91	100	93			
8	17	8.3	8.4	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
9	11	9.4	9.6	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
10	14	10.4	10.4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
Total sum of percentages.....					571	556	567	559	497	559	549	535	440	540	528	444	477	421	486	336	252	341	267	328			
Mental Age Group	No. of Cases	Av. Mental Age	Av. Life Age	Av. I. Q.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5			
					55	58	48	81	53	74	57	74	97	29	19	45	19	13	32	6	0	13	0	13	0	29	71
					71	94	69	100	100	91	94	97	40	60	57	69	60	23	71	31	0	49	0	29	10	44	44
5	31	5.4	20.2		90	97	77	100	96	100	100	97	77	97	90	85	69	72	90	8	90	10	44				
6	35	6.3	18.9		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	82	95	50	55				
7	39	7.4	21.0		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	81	100	71				
8	28	8.4	19.3		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
9	21	9.3	20.4		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
10	25	10.4	23.1		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
Total sum of percentages.....					516	549	511	531	518	563	531	568	417	479	466	496	438	331	476	406	217	447	231	322			
Differential difficulty for defectives.....					-55	-7	-56	-8	+21	+3	+32	+33	-23	-81	-62	+52	-39	-40	-10	+20	-35	+106	-36	-6			
Mental Age Group	No. of Cases	Av. Mental Age	Av. Life Age	Av. I. Q.	IX					X					XI					XII							
					1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5			
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	9	5.5	5.4	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6	14	6.4	6.2	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7	23	7.3	7.4	99	4	17	0	4	13	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0			
8	17	8.3	8.4	99	47	24	53	18	65	12	12	0	6	18	0	0	6	18	0	0	0	0	0	0			
9	11	9.4	9.6	99	91	0	91	100	55	36	36	91	18	73	27	27	9	55	0	18	0	0	18	0			
10	14	10.4	10.4	100	100	64	98	100	79	71	79	64	50	100	71	71	64	79	64	21	0	0	29	7			
Total sum of percentages.....					242	105	227	222	212	119	131	159	74	191	98	98	79	156	64	39	0	0	47	7			
Mental Age Group	No. of Cases	Av. Mental Age	Av. Life Age	Av. I. Q.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5			
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					8	8	13	26	13	8	10	8	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0
5	31	5.4	20.2		21	13	50	62	27	24	24	32	21	18	16	11	8	29	0	11	8	0	29	0			
6	35	6.3	18.9		45	32	91	96	53	43	43	43	62	19	58	29	29	43	19	5	5	0	19	14			
7	39	7.4	21.0		92	40	92	92	66	76	32	88	84	96	72	64	56	64	76	40	20	4	32	30			
8	28	8.4	19.3		169	119	246	276	139	156	90	172	151	179	126	104	96	138	96	59	25	4	85	34			
9	21	9.3	20.4		73	+14	+9	+34	-78	+87	-41	+13	+77	-13	+28	+6	+17	-18	+31	+30	+25	+4	+38	+37			
10	25	10.4	23.1		Differential difficulty for defectives.....																						
Total sum of percentages.....																											

These results make possible an arrangement of the individual tests in a total order of difficulty for either normal or feeble-minded subjects; at the same time, they afford empirical measures of the differential difficulty of each test for the contrasted groups of subjects. The relative difficulties of the tests is obvious from inspection. For example, this order is, for the normal subjects, from easy to hard, V-4 (count four pennies), V-1 (compare two weights), V-3 (repeat ten-syllable sentence), VI-5 (choose prettier), and so on; for the feeble-minded subjects this order would be, V-4, VI-2, VI-3, V-5, and so on. The differential difficulty of each test for the feeble-minded subjects as distinguished from the normal subjects is found in the last line of table I; it has been obtained by subtracting algebraically the sums of percentages of each test for normals from the sums for defectives. For example, test V-1 is passed by a total sum of 571 for normals and by only 516 for defectives; this test is therefore much more difficult for the defectives. These differential difficulties of the individual tests for defectives are set forth in table II. The numerical values in this table have no intrinsic worth except as comparative measures.

TABLE II.—DIFFERENTIAL DIFFICULTIES OF B-S TESTS FOR FEEBLEMINDED SUBJECTS.

<i>Easy for Defectives</i>			<i>Hard for Defectives</i>		
Patience.....	V-5	+ 21	Two weights.....	V-1	-55
Morning or afternoon...	VI-1	+ 3	Square.....	V-2	- 7
Use definitions.....	VI-2	+ 32	"His name is John"....	V-3	-56
Three errands.....	VI-3	+ 33	Four pennies.....	V-4	- 8
Action in pictures.....	VII-2	+ 52	Right and left.....	VI-4	-23
Verbal comparisons....	VIII-1	+ 20	Prettier faces.....	VI-5	-81
Days of week.....	VIII-3	+106	Thirteen pennies.....	VII-1	-62
Better definitions.....	IX-2	+ 14	Lacks in pictures.....	VII-3	-39
Date.....	IX-3	+ 9	Diamond.....	VII-4	-40
Months.....	IX-4	+ 54	Colors.....	VII-5	-10
Money.....	X-1	+ 37	20-0.....	VIII-2	-35
Six digits.....	X-3	+ 13	Stamps.....	VIII-4	-36
Comprehension.....	X-4	+ 77	Five digits.....	VIII-5	- 6
Absurdities.....	XI-1	+ 28	Change.....	IX-1	-73
Complex sentence.....	XI-2	+ 6	Five weights.....	IX-5	-73
Sixty words.....	XI-3	+ 17	Design.....	X-2	-41
Dissected sentences....	XI-5	+ 31	Simple sentence.....	X-5	-12
Seven digits.....	XII-1	+ 20	Rimes.....	XI-4	-18
Abstract words.....	XII-2	+ 25			
Long sentence.....	XII-3	+ 4			
Suggestion.....	XII-4	+ 38			
Problems.....	XII-5	+ 27			

Table II gives rise to some questions of grave import for the psychology of mental tests and of mental development. If we assume that these experimental data are at least sufficiently reliable to raise questions, if not to answer them, then it must be obvious that the real psychological contents of individual mental tests are still far from being understood. Psychologists have been altogether too prone to take for granted that the apparent content of a test is the real content, instead of approaching the matter experimentally. Is repeating the days of the week (VIII-3) so very much easier for defectives than normals of the same intelligence levels because of the greater training or experience of the defectives? Then why does counting thirteen pennies (VII-1) prove to be exceptionally difficult for defectives, although it, too, is apparently subject to the same influences; indeed, these subjects have had much more drill on the latter sort of work than on the former. Why should it be that to repeat five digits (VIII-5) proves hard for defectives, when to repeat six digits (X-3) proves relatively easy, and to repeat seven digits (XII-1) proves to be very easy? How shall we account for these qualitative differences between normal and feeble-minded subjects? Do there exist fundamental so-called specific faculty defects in the mental constitution of the feeble-minded? What is the quality in intellectual brightness which makes practically all of the tests of number comprehension difficult for defectives? Do these data throw some light on the aptitudes of the feeble-minded as a class, some indication of those mental differences which, over and above inferior degrees of intelligence, characterize mental defectives? The limited data of this study are neither of sufficient completeness nor reliability to warrant any very serious attempt to answer these questions at this time, but certainly they indicate a possible method of experimental investigation and analysis in a very fruitful field.

The individual tests of the abbreviated scale have been selected on the basis of the data in table I. This selection is made directly from the experimental data and is not influenced by personal judgments regarding the practical validity of these tests. The selection is based on two considerations, first that each single test should present much greater difficulty of solution to defectives than to normals as indicated by the differential difficulties, and secondly that the selected tests should standardize at some mental year by approximately 75 per cent of passes for the normal subjects, with a steeply and regularly rising standardization curve. Two tests were selected for each year because of the practical convenience of estimating results, and because, as it happened, there proved to be but two tests which could be used at each year according to the criteria of selection.

Tests VIII-2 (counting backwards) and VIII-4 (valuing stamps) proved too difficult with time-limits to standardize at year VIII, but when these tests were rescored for all subjects without regard for the time needed to obtain the correct response, then they standardize at year VIII.¹

In theory, no standardization percentage is adequate for arranging tests into a scale unless account is taken of the correlations between the individual tests of such a scale. I have not computed these inter-correlations, for I have not been able to find a statistical method suited to the needs of the material. But in this respect this abbreviated scale is no less valid than the complete Binet-Simon Scale, except that in theory the values obtained by a scale made up of two tests per year should be lower than the values obtained by a scale made up of five tests per year. But in fact this theoretical inferiority is denied by subsequent analysis of results obtained by the abbreviated scale. Consequently it appears that the present five tests per year of the complete scale are so highly inter-correlated that more than half of them can be dispensed with, without affecting the reliability of the mental ages obtained.

The selected tests and their arrangement into a year scale is presented in table III. The apparatus, procedures, and scores for administering the tests are identical with those employed by Binet and Simon and as modified by Goddard, with the exception, for reasons already stated, that the time-limits are ignored in scoring the two tests at year VIII. Each test of this brief scale has a mental age value of one-half year. General instructions for giving the tests and for interpreting the gross mental ratings obtained, are the same as are now observed in accepted usage.

TABLE III—BRIEF BINET-SIMON SCALE.

V.	VIII.
1. Compare two weights 2. Choose prettier faces	1. Count from 20 to 0 2. Count stamps
VI.	IX.
1. Count 13 pennies 2. Detect lacks in pictures	1. Make change 2. Invent sentence
VII.	X.
1. Show right and left 2. Copy diamond	1. Give rimes 2. Reproduce design

¹ It is interesting to note that although the removal of the time-limits on these two tests affected the percentages of passes for the normal subjects, it did not at all affect the percentages of passes for the feeble-minded subjects.

This brief scale is limited in range from 5 to 10 years, because the experimental data were limited to those age ranges for the normal subjects. But by applying the same methods to groups of subjects of wider ranges of age this scale could be extended in both directions. Six tests, selected on the basis of experience as being probably satisfactory, will be suggested subsequently for years III, IV, XI, and XII. This gives a scale which may be used to advantage in the first five grades of the public schools.

The reliability of the determination of mental ages by this brief scale, as compared with the complete scale, may be measured by correlating mental ages obtained by both scales with the same subjects. For this purpose the complete test-records of all the subjects of this experiment were re-estimated by means of the brief scale of tests. The results yielded a decidedly consistent degree of comparability between the brief scale mental ratings and the complete scale ratings. The Pearson coefficient of correlation between the two sets of mental ratings for the range of ages 5 to 10 was $r=.98$ (P. E. negligible) for the normal subjects, and $r=.90$ (P. E. negligible) for the feeble-minded subjects. The correlations were also computed for each mental age group instead of for the entire range, but the numbers of cases were too few and the possibility of variation too narrow for the coefficients to be of significance; they ranged around $r=.50$. From these correlation values, which measure the degree of reliability of brief scale results in terms of complete scale results, one is justified for practical purposes in substituting brief scale ratings for complete scale ratings, by means of conversion constants. These substitutions, as mental ranks, will have practically the same reliability for normal subjects as for feeble-minded subjects, but the mental age *values* for the feeble-minded subjects will be from 5 to 10 per cent lower (see table V) by the brief scale than by the complete scale, whereas the mental age values of the normal subjects will be approximately the same by both scales.

This conclusion is sufficiently surprising to merit further analysis. If mental measurement is to extend very far into the fields of pedagogy or of social science, simplicity and economy of technique are secondary only to accuracy of results. Therefore, if two systems of measurement yield results which are so highly correlated that for practical purposes they may be interchanged, it is desirable for practical utility to eliminate the less efficient method, provided that no loss of accuracy ensues. We have seen that this brief scale does retain the reliability of the complete scale as a measure of intelligence level, and in addition has the merits of reduced speed, simplified

technique, and reduced apparatus. The technique can be mastered in half an hour by intelligent persons acquainted with the essential principles of educational or psychological measurement, and individual subjects can be examined by this scale in from 5 to 10 minutes. For example, in examining a 9-year-old boy, a mental age of 8.5 was secured in less than ten minutes by means of the brief scale; thirty minutes additional examination together with the tests already administered yielded a Goddard Binet age of 8.2; and twenty minutes of still further examination together with the tests previously administered yielded a Stanford Binet age of 8.4. This case is typical rather than exceptional; it is selected at random. No medical inspector or court official could afford to devote sixty minutes to such an examination under the heavy pressure of hundreds of cases; nor need he do so when he can obtain equally valid results in an examination requiring only ten minutes.

II.

The Binet-Simon Scale is made up of five tests per year, and each test is presumed to be located at the year where it is passed by approximately 75 per cent of normal children of that age. The individual tests and the scale as a whole are designed to measure general intelligence. It is assumed that the more angles from which this general intelligence is examined, the better it will be for completeness and accuracy of results. But if one test is statistically as good as another, and if psychologically each test actually does measure general intelligence, that is to say is highly correlated with each of the other tests, then more than one test per year should not be necessary, except, possibly, to avoid chance errors in individual cases.

The statistical reliability of the scale is a function of three variables, namely, the percentages of passes from year to year, the inter-correlations between tests, and the number of tests per year. Up to the present time no one has attempted to determine the reliability of the scale on the basis of these three elements. It has been shown above that a scale composed of two tests per year will give mental age results which correlate almost perfectly with results obtained from the scale with five tests per year. This can only mean that the five tests per year are so highly inter-correlated that more than half of them may be dispensed with without serious loss to the mental age ratings desired.

The question naturally arises, is the brief scale valid because of this conjectural high inter-correlation, or is it due to the innate worths

of the tests which have been selected for diagnostic values? Is it essential that the tests should offer exceptional difficulty to mentally defective subjects, or might not a brief scale of tests made up of "non-diagnostic" tests, those which are easiest for defectives, give just as reliable results as one composed of the hardest tests? To test this hypothesis I have composed a second brief scale from the tests which proved easiest for the defectives, and which were passed by approximately 75 per cent of normal subjects for the age where the test is located. This second scale is presented in table IV. In theory this second scale should correlate with the complete scale about as well as the first brief scale, previously developed, for the tests are located according to the same criterion of placement, and, presumably, have about the same degree of inter-correlation. The only difference to be expected is that the mental age *ratings* obtained by the first brief scale will be somewhat *lower* for defectives (since all these tests are exceptionally difficult for defectives), and by the second brief scale will be somewhat *higher* (since all these tests are exceptionally easy for defectives), whereas the mental ages of normal subjects will be approximately the same by both brief scales (since the tests of each scale are for them of indifferent degrees of difficulty). The only differences in the *reliabilities* of the two brief scales would result from possible unsuspected inequalities in the amounts of correlation between the several tests of each scale. For example, if the difficult tests should be highly inter-correlated and the easy tests not highly correlated, then the first brief scale would prove more reliable than the second.

TABLE IV.—SECOND BRIEF BINNET SCALE.

V.		VIII.	
1. Distinguish A. M. from P. M.		1. Name days of week	
2. Define by use		2. Repeat five digits	
VI.		IX.	
1. Execute three directions		1. Give date	
2. Solve "patience"		2. Name months	
VII.		X.	
1. Describe action in pictures		1. Recognize money	
2. Compare verbally		2. Repeat six digits	

The actually obtained Pearson coefficients of correlation between mental ages derived by the second brief scale compared with those obtained by the complete scale are $r = .95$ for the normal subjects (as compared with $r = .98$ for the first brief scale), and $r = .92$ for the

feeble-minded subjects (as compared with $r=.90$). Apparently, therefore, our conjectures are correct and the easy tests are just about as highly correlated (as a system) as the difficult tests. Consequently, one may expect to obtain almost identical rankings for subjects whether one uses the complete scale or either of the brief scales. The actual mental ages themselves, however, while remaining approximately the same for normal subjects by any of the three scales, would be with defectives lowest by the first brief scale and highest by the second. To convert ratings from one scale to another it is necessary only to apply conversion constants which may be derived from the data of table V. The data of this table are computed for the mental age groups as classified by the complete scale ratings. Mean variations from the averages have been omitted in order to simplify the presentation. These variations are so small (the coefficient of variability was not as great as .10 for any average) that variability is practically negligible. The lowest m. v. was .1 and the highest .6.

TABLE V.—COMPARISON OF AVERAGE MENTAL AGES BY THE THREE SCALES.

Binet Age Group	NORMAL SUBJECTS				FEEBLE-MINDED SUBJECTS			
	No. Cases	Av. M. A. Complete Scale	Av. M. A. Brief Scale No. 1	Av. M. A. Brief Scale No. 2	No. Cases	Av. M. A. Complete Scale	Av. M. A. Brief Scale No. 1	Av. M. A. Brief Scale No. 2
5	9	5.4	5.0	5.3	31	5.3	4.7	5.8
6	14	6.4	6.2	6.0	35	6.3	5.6	6.7
7	23	7.3	7.0	7.1	39	7.4	6.7	7.7
8	17	8.2	8.0	8.1	38	8.4	7.7	8.6
9	11	9.5	9.2	9.5	21	9.1	8.5	9.2
10	14	10.4	9.7	9.6	25	10.4	9.4	9.7

From these considerations it appears that the present Binet-Simon Scale may be divided into two scales of approximately the same degree of reliability, and that these brief scales might be used alternately by the aid of conversion constants to correct minor differences in estimated mental ages. One may also conclude that the worth of a test as a reliable measure of mentality is not necessarily to be determined by diagnostic values, but instead is determined by the standardization percentages in relation to the inter-correlation between tests. The advantage of a scale made up of diagnostic tests lies in the automatic exaggeration of mental retardation which such a scale produces with mentally defective subjects. By the use of the first of these brief scales, for example, the mental ages of

feeble-minded subjects are automatically reduced by approximately 5 to 10 per cent. This may prove to be of very definite service in detecting feeble-mindedness in potentially feeble-minded subjects and in borderline cases. By the second brief scale the mental ages of mental defectives are slightly increased, which effect has no material value. On the other hand the mental ages of normal subjects are relatively the same by either of the brief scales or the complete scale.

Because of the automatic exaggeration in the mental retardation which the first brief scale shows with feeble-minded subjects, the first scale is to be commended to those examiners who must conduct rapid mental examinations intended to yield preliminary indications of mental subnormality. It may also be pointed out that the tests which make up the first brief scale are for the most part the very tests which extended experience has indicated as the best and most reliable from the standpoint of experimental technique. The tests of the second brief scale, on the contrary, are for the most part the least desirable tests of the scale, being too much influenced by chance errors and by mechanical memory.

These brief scales are presented as valid only to a mental age of 9 years (because of the absence of tests in higher levels), and consequently have a limited range of application. They were developed as an experimental demonstration of method; their practical value was not anticipated. But for practical utility I have extended the first brief scale in both directions, by adding tests for the years III, IV, XI, and XII. These additional tests were selected on the basis of my personal opinions as to the most satisfactory tests for those years. These opinions are based on observation and experience with both normal and feeble-minded subjects, supported by miscellaneous experimental data. This entire brief scale as now employed for rapid examining at the Vineland Laboratory is presented in table VI. It is to be noted that because of the absence of tests beyond year XII this scale is not reliable in measuring mental capacity beyond 10 years.

A similar record blank for the measurement of mental levels beyond 10 years could easily enough be experimentally developed. I myself lack the experimental data for such an undertaking, but have composed a theoretical abbreviated arrangement of tests from the Stanford Extension and Revision of the Binet-Simon Scale. I have used this abbreviated Stanford scale with very satisfactory returns, but have not a sufficient amount of data yet on hand to be statistically significant. The selection of these tests is wholly conjectural, being based on my personal experiences with the Stan-

TABLE VI.—DEPARTMENT OF RESEARCH, THE TRAINING SCHOOL AT VINELAND.

Record blank for rapid Binet-Simon Testing.¹

Name	Date	Mental age
Born	Time	Life age
School grade	Examiner	Status
<hr/>		
III.		VIII.
1. Repeat "His name is John" etc.		1. Count from 20 to 0 Errors Time
2. Give sex.		2. Count stamps Amount Time
<hr/>		
IV.		IX.
1. Repeat three digits	583	1. Make change 20—4 Time
1.	729	25—6 Time
2. Compare lines	614	2. Invent sentence
2.		(Philadelphia, money, river)
3.		
<hr/>		
V.		X.
1. Compare two weights	6—15	1. Give rime day Time
	18—9	mill Time
	15—6	spring Time
2. Choose prettier	1. 2. 3.	2. Reproduce design (over)
<hr/>		
VI.		XI.
1. Count 13 pennies		1. Give sixty words
2. Detect lacks	Eyes	1.
	Nose	2. Arrange sentences
	Mouth	2.
	Arms	3.
<hr/>		
VII.		XII.
1. Show right and left	L. hand	Charity
	R. ear	Justice
	L. eye	Goodness
2. Copy diamond (over)		2. Solve problems Hanging from limb
		Neighbor's visitors

¹ NOTE.—These tests are to be administered and scored according to the procedures and standards employed by Goddard, except that the time-limit is removed from the two tests at year VIII. The mental age value of each test is one half year, assuming II as a basal year.

ford scale with normal and feeble-minded subjects. The mechanical arrangement of three tests at some years and four at others is an empirical adjustment of the two-year intervals and the variable values assigned to the upper tests by Terman; this arrangement also retains the numerical ease of estimating results, with each test having a value of one half year in the mental age score. This brief Stanford scale is presented in table VII. It is subject to the same general uses as the complete Stanford scale.

TABLE VII.—DEPARTMENT OF RESEARCH, THE TRAINING SCHOOL AT VINELAND.
Record blank for rapid Binet-Simon testing (Stanford revision).¹

Name	Date	Mental age
Born	Time	Life age
School grade	Examiner	Status
<p style="text-align: center;">X.</p> <p>1. Vocabulary (5 words).</p> <p>2. Comprehension (2 of 3): Asked opinion Something important. Action vs. words.</p> <p>3. Designs.</p>		<p style="text-align: center;">XVI.</p> <p>1. Vocabulary (22 words).</p> <p>2. Abstract words (3 of 4): Laziness—idleness. Evolution—revolution. Poverty—misery. Character—reputation.</p> <p>3. Six digits backward: 471952. 583294. 752638.</p> <p>4. Inclosed boxes (3 of 4): One large, 2 smaller, 1 inside. One large, 2 smaller, 2 inside. One large, 3 smaller, 3 inside. One large, 4 smaller, 4 inside.</p>
<p style="text-align: center;">XII.</p> <p>1. Vocabulary (10 words).</p> <p>2. Dissected sentences (2 of 3): Started for country. Asked teacher. Good dog.</p> <p>3. Five digits backward (1 of 3): 31879. 69482. 52961.</p>		
<p style="text-align: center;">XIV.</p> <p>1. Vocabulary (15 words).</p> <p>2. President and king.</p> <p>3. Arithmetical reasoning (2 of 3): \$300. Pencils. Cloth.</p> <p>4. Problems of fact (2 of 3): Hanging from limb. Visitors. Bicycle.</p>		<p style="text-align: center;">XVIII.</p> <p>1. Vocabulary (28 words).</p> <p>2. Paper cutting (Binet).</p> <p>3. Thought of passages (1 of 2): Tests. Opinions.</p> <p>4. Ingenuity (2 of 3): 3 and 5 to get 7 (begin 5). 5 and 7 to get 8 (begin 5). 4 and 9 to get 7 (begin 4).</p>

VOCABULARY.

1. pork.	11. juggler.	21. tolerate.	31. retroactive.
2. outward.	12. regard.	22. artless.	32. ambergris.
3. southern.	13. stave.	23. depredation.	33. achromatic.
4. lecture.	14. brunette.	24. lotus.	34. perfunctory.
5. dungeon.	15. hysterics.	25. frustrate.	35. casuistry.
6. skill.	16. Mars.	26. harpy.	36. piscatorial.
7. ramble.	17. mosaic.	27. flaunt.	37. sudorific.
8. civil.	18. bewail.	28. ochre.	38. parterre.
9. insure.	19. priceless.	29. milksop.	39. shagreen.
10. nerve.	20. disproportionate.	30. incrustation.	40. complot.

¹ These tests are to be administered and scored according to the procedures and standards described by Terman in "The Measurement of Intelligence." The mental age value of each test is one-half year, assuming IX as a basal year.

It may be advisable to emphasize some of the limitations of the brief scale as well as its advantages. Equivalence in mental age rating must not be misconstrued as meaning complete psychological or clinical equivalence. Neither may one forget that a mental age rating does not in itself alone furnish a sufficient means of mental diagnosis or determinations of feeble-mindedness. The more complete measuring scales of intelligence furnish a much greater variety of standard situations in which the subject may be caused to display his mental abilities to the trained observer. Moreover, the results of the more extended examination are more satisfactory by reason of the more elaborate consideration of more phases of the subject's intelligence, and rule out the possibility of invalidation due to exceptional circumstances of environment or education. The chief consideration is that the gross mental ages and the resulting gross intelligence classifications obtained by use of the brief scales are practically the same as those obtained by the more extended scales. In this capacity a brief scale should prove to be of special value in assisting public school officials to gain insight into the underlying abilities of their pupils. It also furnishes a satisfactory instrument for rapid survey work in intelligence classifications. It is, moreover, a convenient pocket instrument for all field workers and for hasty juvenile court work. Such a scale may be used with accuracy and completeness, because of its very brevity, where a more cumbersome method might be used inefficiently.

(To be concluded)

A CASE OF EDUCATIONAL RETARDATION.

BY CHARLES L. HARLAN,
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Early in October, 1916, Andrew C. applied to Unity House Settlement for instruction in reading the English language. He was referred to the writer as a fit subject for instruction and, as an educational experiment, the writer undertook to teach him to read. Accordingly he appeared October 12th and, with two exceptions, every Wednesday evening thereafter until May 16, 1917. He was given two hours of instruction and practice in reading each Wednesday evening, amounting in all to sixty hours. It is not to be understood that he read for two hours in any one evening. The work was varied in character, consisting of word-study, drill on sight and phonetic words, spelling, copying, writing answers to questions based on what had been read, both oral and written reproduction, testing of word recognition, determination of rate of oral and of silent reading, and some discussion of methods of mastering the symbols of the printed page and of oral expression. This two hours work was supplemented by evening study at home. The home study was also varied somewhat in the ways indicated for the instruction period with the exception that no testing was done at home. The Mann Readers (1) supplemented by other books and reading material, formed the basis for the instruction as well as the basis for determining the progress made.

The following facts are stated in order to make clear the conditions under which the subject worked: Andrew was born of Swedish parents in Sweden, July 24, 1898. He is eighteen years and four months old, emigrated to Saskatchewan, Canada, when he was three years of age, and to Minneapolis when he was sixteen. He attended a rural school in Canada in all seven or eight months. His attendance was irregular because of the severe weather, and the teachers were poor, he claims, since they always had trouble and left the school before the winter was over and no new teacher was secured until the following year. When he became older he had to remain at home and help his father on the farm. He could not speak English when he entered school, and during the short time which he attended he learned to speak but not to read or write English. He now speaks English practically without the accent

¹ This experiment was conducted as a part of the work of Dr. M. E. Haggerty's Seminar in Educational Psychology during the year 1916-17.

peculiar to Swedish speaking people, but he has a very limited vocabulary. Swedish is spoken at home by both parents, but he has a sister who is enrolled in the fifth grade of the Minneapolis schools, and who speaks, reads, and writes English. When beginning his work in reading it was discovered that he knew the alphabet, the sounds of most of the letters, could write the letters and a few words, and could recognize by sight probably fewer than a hundred words. He lives at home under favorable conditions, is now working as helper to a die-setter, and is making 17.5 cents per hour. He desires to become a die-setter because it offers good wages and he thinks he would like the work. He wanted to learn to read in order to be able to read signs, the newspapers, instructions about his work, and rhymes and stories which he hears his sister read and some of which he can repeat from hearing them read. He is somewhat handicapped by defective vision and has to wear thick-lensed glasses.

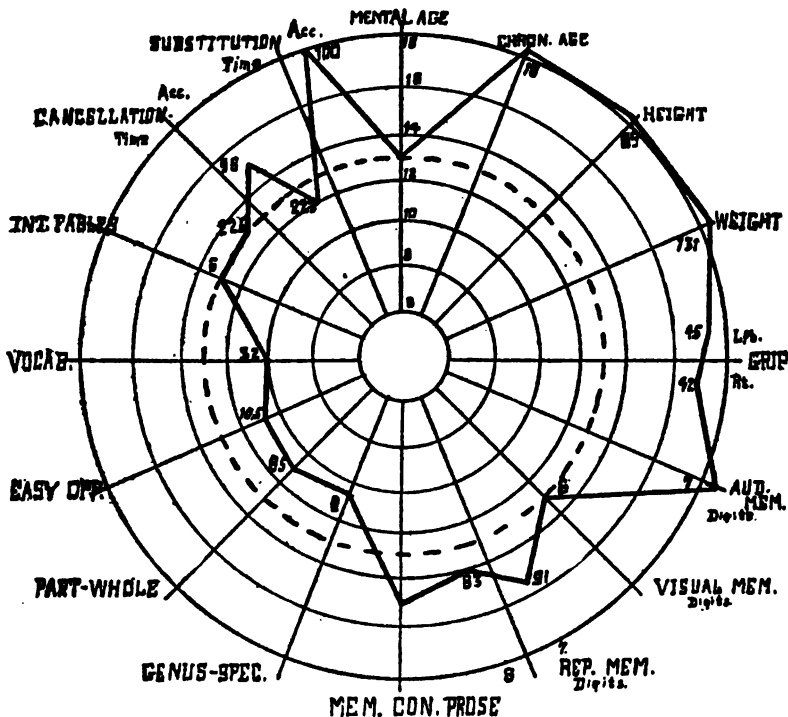


FIGURE I.

The points at which the circles cross the radii represent the norms in the tests represented by the radii and for the ages represented by the circles. The dotted line indicates the thirteen year old norms which also represents the subject's mental age as shown by the Stanford Tests. The heavy line shows the subject's standing in the various tests.

On October 5th he was given the Stanford Revision of the Binet Tests (2) along with certain other mental and physical tests (3), (4), (5). His standing in these tests is represented graphically in figure 1. His performance indicates age-standings of from ten to eighteen years as compared with the age norms in the various tests. In the physical traits recorded, in the auditory memory for digits, and in accuracy in the substitution test he is up to the standard of the average eighteen-year-old individual. His performance in terms of time is always slower than the average. His low standing in cancellation may be due in part to defective vision. This may also account in part for his low standing in memory for digits through visual presentation. In all the other tests given him he ranks from three to eight years below the eighteen-year-old norms. His mental age is thirteen according to the Stanford Test. His inferior rank in these mental tests in all probability represents an educational retardation rather than a mental retardation, or at least a mental retardation due in large part to lack of schooling and lack of training in the use of language. In applying the Stanford Tests all exercises involving reading or visual knowledge of words had to be omitted. Likewise in the other tests word knowledge or vocabulary knowledge is involved. If one has never seen certain words in print, has never written them, and has never heard them understandingly, these words cannot be said to be in such a person's vocabulary. If tested, therefore, on material involving these words, even though visual presentation be not involved, one's standing must necessarily be somewhat lower than that of persons whose familiarity with these words has been acquired through reading them, writing them, and speaking them. On these grounds it is claimed that Andrew's case is one largely of educational rather than of mental retardation.

It is a difficult matter to measure progress in reading. A series of reading tests of equal difficulty is needed for this purpose. If a reading test be once given, its usefulness as a test for the same individual is destroyed. Moreover, there are several elements in the reading process, and in order to measure progress in reading it is necessary to measure each of these elements. Progress may be made in rate of either silent or oral reading, in quality of either silent or oral reading, in mastery of phonetic symbols, in number of words recognized in context, and in depth of meaning attached to printed or written symbols. Progress in only a part of these was measured as the subject learned to read.

When several pages had been read either silently or orally and the difficult words had been explained and the pronunciation fixed,

the pupil was asked to read these pages again at home. By means of the lists at the back of the books used, the pupil's recognition of the words previously gone over in context was tested during the following instruction period. A list of the words which the subject failed to recognize was made each time. In addition to these tests the pupil was tested five times on the complete primer and first reader lists, and four times on the complete second reader list. In these tests also lists of the unrecognized words were made. By comparing the above named lists it was possible to determine the difficult words, something of the nature of the difficulty, and the final percentage of words found

TABLE I.—PERCENTAGE OF COMPLETE LISTS OF WORDS RECOGNIZED IN SUCCESSIVE TESTS.

Date	Total No. of Words	Number Wrong	Percentage of Words Recognized	Time, minutes
Primer list:				
Nov. 22.....	333	96	71.3	27
Nov. 29.....	333	48	85.6	27
Jan. 3.....	333	52	84.4	27
Feb. 7.....	333	42	87.4	30
Apr. 25.....	333	17	94.9	31
First Reader:				
Jan. 3.....	457	71	84.5	34
Feb. 7.....	457	85	81.4	35
Feb. 14.....	457	68	85.1	26
Mar. 14.....	457	66	85.6	28
Apr. 25.....	457	28	93.9	42
Second Reader:				
Jan. 17.....	666	214	67.8	104
Jan. 24.....	666	196	70.6	100
Feb. 14.....	666	151	77.3	47
Apr. 25.....	666	57	91.5	45

in each book which had not been mastered, or at least not sufficiently well understood to be recognized at sight. No drill was given on any of these lists except that involved in the reading of these words whenever they occurred in the context. The results of these tests, therefore, give a basis for measuring the pupil's increase in vocabulary, both in the recognition and in the understanding of words. The time required for giving each test was also recorded. Table I shows these data for the primer, first, and second reader lists.

The results of the tests on complete lists only are given in the above table. There is a marked increase in the percentages of words

recognized at successive periods. There are two exceptions to this statement however. One is in the primer list for January 3d and the other is in the first reader list for February 7th. The words missed on each succeeding test are not necessarily the same words, but in general they are the same words as will be shown in a later table. The time taken for going over the complete lists does not vary greatly in the primer and first reader tests, but there is a marked decrease in the amount of time taken for the second reader list from the first two to the last two tests.

The curves of figure 2 represent the progress made in word recognition from the first test to the last in the complete as well as partial lists. All of these curves indicate gradual though not uniform progress in this performance in all three of the lists used. The curves all terminate near the same point.

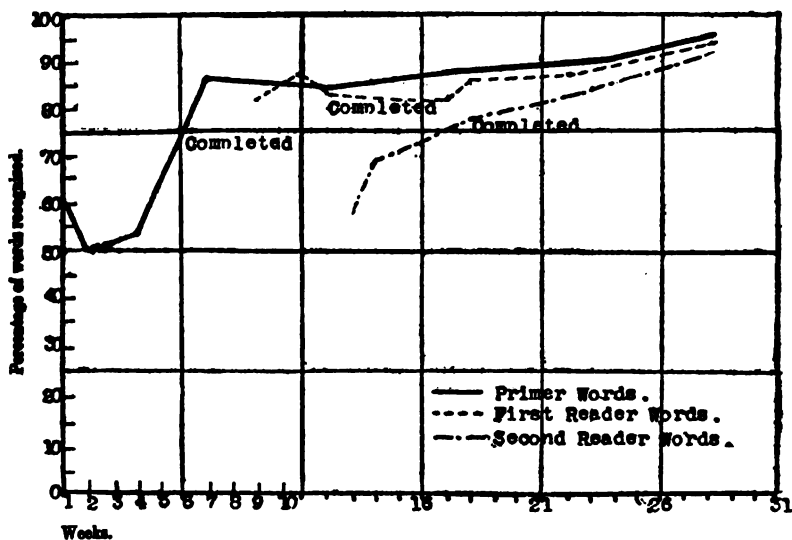


FIGURE II.

Increase in percentage of words recognized in the various tests from week to week without any drill on words except when found in the context of the Primer, First, and Second Readers.

This point in all cases is above 90 per cent. This means that on April 25th Andrew recognized at sight more than 90 per cent of all the words encountered in the reading of the primer and first and second readers. It will also be noted that at all times he was able to recognize 50 per cent or more of the words he had previously gone over. The testing was continued after the reading of the texts had been finished. It will be seen that the improvement after completing the texts was never quite so marked as while the text was being read,

nevertheless, there is improvement which is regular and continuous. Just how much of this improvement is due to repetition of primer words in the first reader, and of first reader words in the second reader was not ascertained. The reading of the Mann third and fourth readers was also completed. In addition to this, material from other readers, elementary geographies, language books and histories was read. In amount this additional material would total 125 pages.

When one considers that the pupil had, in all, only fifty-six hours of instruction, with at least an equal amount of time spent in home study, it must be said that Andrew's was a remarkable performance. He did in twenty-eight weeks what it takes the normal child under ordinary school conditions three or four years to do. This is significant in view of the fact that the Stanford tests indicate a mental age of thirteen as compared with a chronological age of eighteen for the pupil. Andrew's performance seems to verify the statement that his is a case of educational rather than mental retardation.

When tested on the Haggerty (6) phonetic and sight lists of words, the improvement is quite as marked as in the case of the Mann Readers lists. Table II shows the percentage of words in these lists recognized on three different dates. The lists were the same each time but the order of words was changed for each successive test.

TABLE II.—IMPROVEMENT IN WORD RECOGNITION.

Date	PHONETIC LIST		SIGHT LIST	
	Percentage Correct	Time, hrs. min.	Percentage Correct	Time, hrs. min.
Nov. 1.....	44	1 50	53	2 30
Nov. 22.....	56	1 50	57	2 43
Dec. 20.....	68	2 10	73	3 05

The standings in the sight test, for corresponding dates, are higher in every case than the standings in the phonetic test. There is, however, a material difference in the amount of time required to recognize the sight words over that required to recognize the words of the phonetic list. There is also a marked increase in the amount of time for recognizing the words of the sight list in successive tests. The increasing percentages of words correctly given is evident in both lists. The pupil was not tested on these lists later than December so it is impossible to indicate his present knowledge of these words, but since they are all found in the lists of the Mann Readers the pupil

probably knows a larger proportion of them than indicated in the above table.

There was also an increase in the rate of oral reading. A part of each instruction period was devoted to oral reading. The rate was ascertained for the total amount of material read orally during any one period. This would tend to eliminate fluctuations in rate due to difficulty of reading matter. No correction was made for the increasing difficulty of material as the pupil proceeded from primer to fourth reader. The increase in the number of words read per minute is shown in table III, also graphically in figure 3.

TABLE III.—INCREASE IN RATE OF ORAL READING.

Date	Words Read per Minute
Oct. 19.....	9
Oct. 25.....	13
Nov. 1.....	19
Nov. 8.....	27
Dec. 13.....	31
Jan. 31.....	30
Feb. 7.....	39
Feb. 21.....	41
Mar. 14.....	64
Apr. 25.....	72

There is a gradual though not rapid increase in rate of oral reading as indicated for the different test periods. No doubt the fluctuations in rate would have been evident had the rate been ascertained for shorter periods of time and at more frequent intervals. It will be noted that the large increases in rate came during the earlier periods and again during the month of February. It is also to be noted that the subject still reads very slowly. This is due in part to the persistence of the phonetic methods of attacking words. The curve manifests the plateau aspect of the learning curve. The long plateau is probably to be accounted for by the fact that it was during this period the "sight" method of reading was being substituted for the phonetic method. The rapid rise during the February periods is due in part at least to a dominance of sight over phonic mastery of words. It is not known how much this curve is flattened by the increasing difficulty of the material in the texts read.

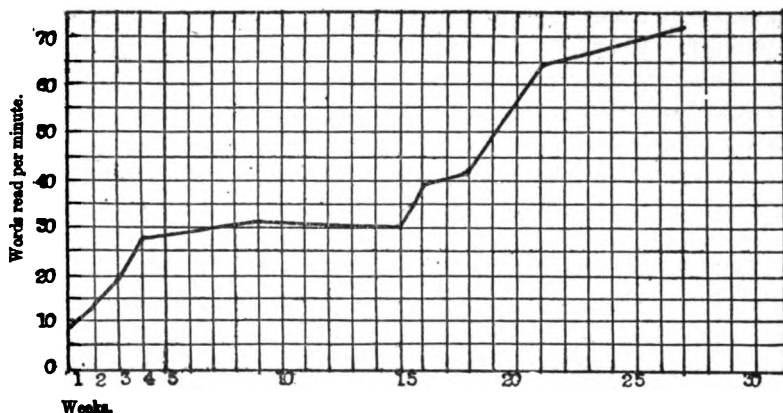


FIGURE III.—INCREASE IN RATE OF ORAL READING.

The silent reading at first was not at all silent. The words were whispered and very difficult ones were occasionally vocalized. Later the sounding was reduced to lip movements and still later, especially on the easier passages, there were no lip movements. This subordination of the motor aspects of silent reading took place apparently with no conscious effort on the part of the pupil and no suggestions were made by the instructor as to changes in methods. The rate of silent reading was fifty-five words per minute on March 7th. This rate had increased to seventy-five words per minute by April 25th. This is much below the rate of normal children in the grades of the public schools.

The quality of reading done by the pupil, as measured by the amount he was able to reproduce or by answers to questions on what had been read, indicates excellent ability along this line. Although he read slowly he was able to grasp approximately half the ideas presented in the printed page. On March 7th he was given the For-dyce (Narcissus) (7) tests in reading. His rate of silent reading at that time was fifty-five words per minute with a quality of fifty. He was again tested April 25th, when he showed a rate of seventy-five and quality seventy. For understanding of sentences a test was given on November 8th. He then ranked 4 on the Thorndike scale (Alpha 2.) (8). On January 31st he had reached and passed exercise of difficulty 6, and on March 7th he ranked at exercise of difficulty 8. In all these tests his reading was slow but comprehensive.

He was also given the Indiana revision of the Thorndike vocabulary scale (9) on November 8th, December 13th, and January 24th. On the first test his score was line value 15, on the second, 25, and on the third, line value 35. In the Trabue language test Scale C (10)

on November 8th his score was zero, but on February 7th he made a score of 7.

Although he knew how to write his name and could write most of the letters of the alphabet with pencil when he first appeared for instruction, it can not be said that he could write. He could draw the letters slowly and laboriously at the rate of about eight per minute. No instruction was given in writing and no effort was made to have the rate or quality of the copying improve. He was, however, asked to copy the script words of the primer and the sentences of the first reader. That he learned to write is indicated by his writing performance on April 25th, when he wrote a page of approximately quality 50, Ayres Scale (11), at the rate of fifty-six letters per minute.

Andrew's attainments in these educational activities in the

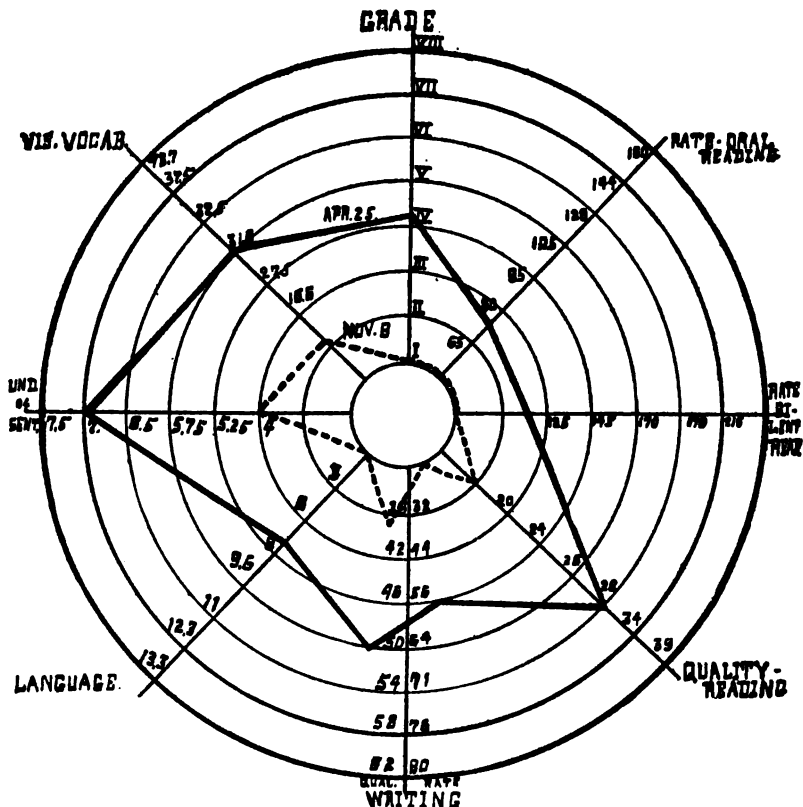


FIGURE IV.

The dotted line represents the pupil's standing on November 8th relative to the norms of the different grades. The heavy line indicates his standing on April 25th relative to the different grade norms.

initial periods and in the final periods are represented in figure IV. In this figure the dotted line represents his achievements on November 8th relative to the achievements of normal children in their respective grades. The heavy solid line represents relatively his attainment on April 25th. The distances between the solid and the dotted lines on the radii of the circles measure, in terms of grades, the improvement made during the twenty-eight weeks of instruction in reading. It will be seen that in this time he made from a grade-and-a-half of progress in rate of reading to four grades of progress in understanding of sentences or in quality of reading. It should also be noted that although no instruction was given in language as such, or in writing as such, there was marked progress in both of these performances. This suggests a close correlation between these school activities and reading.

Aside from the data of these tests there is the additional evidence that considerable improvement was made since he passed from the primer level to that of the fourth reader level in his ability to read. On May 16th he could read some in the newspapers, in the elementary geographies, histories, and language books.

It is important to note the processes through which this improvement was made. With this in view careful records and notes were made as to the difficulties encountered, how they were overcome, and devices and aids which proved helpful. In addition to these data the pupil was asked to state what his greatest difficulties were and how they were overcome.

First of all it must be kept in mind that the pupil wanted to learn to read. He had been confronted by obstacles which ability to read would have helped him to surmount. He had been somewhat chagrined to hear his younger sister read material the meaning of which he could not get without her aid. He had also discovered that in order to do the work he desired to do and to secure the wages he wanted to secure, ability to read was necessary. Under these conditions the services of an instructor, although somewhat necessary, were never more than supplementary to the fundamental processes of learning to read.

No methods of procedure were outlined for the pupil since it was deemed desirable to discover how the pupil proceeded to learn to read. However, after a method, device or trick of mastering the printed page had been discovered by the pupil, its usefulness was discussed with him. The methods and devices of attacking words were the ones ordinarily used by pupils in learning to read. The sounding of letters and syllables, association of new words with objects pictured on the same page, combination of new syllables

with stem words already known, similarity in appearance of words, similarity in sound of words, suggestiveness of rhymes and stories already known through hearing them read or recited, and recall of words because of their frequent occurrence in a phrase or familiar group of words, all proved helpful. It was found, however, that none of these aids and devices were adequate substitutes for a reasonable amount of drill and repetition. Pronunciation of the word by the teacher, although immediately helpful, did not prove useful in later encounters with the same words except when the pronunciation was repeated. Neither did discussing the meanings of words aid in more ready recognition of words at the next encounter.

There were certain difficulties accompanying the use of the above mentioned aids and devices. In sounding the letters and syllables the different sounds of each of the vowels were very confusing. Association of words with pictures on the same page often led to failure to recognize those words in context on the following pages where no pictures were given. Recall of words through their phrase or group associations was helpful only when the other words of the phrase or group were familiar. The method of recognition of words through similarity of appearance was sometimes misleading in the case of words different in sound.

In addition to these difficulties of method there were certain difficulties inherent in the nature of the words or letters themselves. The following letters and syllables were found to be difficult: the distinction between *m* and *n*, *b* and *d*, *p* and *q*, and the phonograms, *ch*, *sh*, *ea*, *ow*, *ou*, *ough*, *oa*, *ie*, *oo*, *gh*, *ght*, *ing*, *ly*, *ph*, *y*, *th*, *ng*, *sp*, *ive*, etc. Letters known when alone were not known in certain combinations. Capital letters were not known as the same small letters. Contractions were not recognized as such. Words which begin or end alike were confused, *e. g.* *than*,—*that*, *going*—*doing*. Added syllables or changed endings sometimes make the word unrecognizable, *e. g.* *small*—*smaller*, *go*—*goes*, *come*—*coming*. Plurals and possessives were found to be confusing. These are undoubtedly the difficulties usually encountered by pupils in learning to read.

There were also certain words which seemed to be difficult for the pupil and which were still difficult at the close. The list of words missed in the first test and in the last test is given on page 223.

The starred words are the ones missed on both the initial and final tests and on the intermediate tests. In the primer list 11 of the 17, or 65 per cent, of the words missed in the list of 333 words are the same words missed on every test. In the first reader list of 457 words 28 were missed in the final test. Of these 17, or 61 per cent, are words which had been missed in all previous tests.

Primer list. (333)

back	fur	*business	*seize
*bin	*gate	*certain	*shout
*buy	*gown	chase	*silent
*buss	*grain	*color	since
*cabbage	*guess	*curious	*sour
*down	*lady	daughter	*stair
*flour	lid	*dough	*stalk
fun	*nut	*fierce	*stir
*gnaw	*ought	*fury	*straight
*Kate	plum	*Grace	*suit
lion	*pond	*grieve	sunshine
now	pur	*groan	*sure
pot	*sailor	*insect	surround
put	scissors	*known	*throat
*star	sleigh	*language	*tickle
*very	Spain	*laugh	tongue
*want	*tall	*manner	tooth

First Reader list.
(457)

bellows	through	notion	treated
brown	*toss	*people	*truly
*claw	*watch	print	*violet
*eight		promise	*wear
*farther	Second Reader list.	puzzle	*whine
feather	(666)	quite	*whose
*field	*angel	*remain	wigwam
	*beast	replied	*wrinkle
	*break	*secret	

In the second reader list of 666 words, 57 were missed in the final test. Of these, 40, or 70 per cent, are words previously missed. These figures indicate that 60 per cent or more of the words encountered and presenting difficulties are persistently and inherently difficult. But since on the final test approximately 10 per cent of the total number of words encountered were found too difficult for recognition, this means that approximately 6 per cent were persistently and inherently difficult. That this was true of a small number of words has already been pointed out by Haggerty (9). These words should be discovered as soon as possible and selected for special drill. This was not done in Andrew's case, consequently his vocabulary efficiency on April 25th was about 90 per cent of 1456 words.

The following summary sets forth some of the conclusions concerning this case:

(1) Although the mental status of the subject indicated retardation of five years, the subsequent improvement in several abilities indicates that this was due to lack of schooling and not to low mentality.

(2) The progress made in learning to read was accompanied by corresponding improvement in language and in writing, as well as improvement in the several abilities involved in the reading process itself, such as increase of vocabulary, understanding of sentences, rate of silent and of oral reading, and in ability to reproduce what was read.

(3) The aids, devices, and methods of learning to read which were found helpful, were numerous and not limited to one process. These, although worked out independently, were found to correspond closely to those in ordinary use in most class rooms.

(4) The difficulties encountered, although varied in kind, are not numerous and the words causing difficulty are limited in number to about 6 per cent of all the words encountered.

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CLINIC REPORTS.

XXII

Abraham, a Russian Jewish boy, was brought by his teacher to the Psychological Clinic January 6, 1916, at seven years and six months of age. He was one of fifteen children who had failed on the Witmer formboard test when Dr. H. H. Young, then a research student in Psychology at the University of Pennsylvania, gave this test to all supposedly normal children—approximately 1400—over six years of age of an entire school to procure data for the purpose of standardizing the test. Abraham was completing his second term in the 1 A grade, and was not to be promoted; nevertheless, his teacher did not consider him backward until Dr. Young suggested it. The result of the examinations at the Clinic revealed the fact that Abraham was not only backward but unquestionably feeble-minded, and in my opinion his grade is that of a low grade imbecile. My diagnosis is based on Dr. Young's report of Abraham's failure on the formboard, the results of the examination of January 6, 1916, the results of a re-examination made nine months later, and on his pedagogical history. This diagnosis is further confirmed by his backwardness in teething and in learning to walk and talk, by a lack of motor control and poor co-ordination, and by the fact that he is still unable to dress himself completely.

Abraham's reactions to the tests given him at the Clinic show that he is deficient in distributive and analytic attention. He lacks alertness and initiative; he has poor motor control and poor co-ordination; his imageability and associability are not sufficient to perform successfully such a test, for instance, as the design blocks. His pedagogical history indicates that his memory is resistant to training, due to deficient retentiveness. In my opinion, Abraham's greatest mental defects are his lack of understanding or lack of comprehension, lack of planfulness and deficient intelligence.

Abraham spent two terms in a regular 1 A grade class, and a little more than one term in a special class. The special class teacher states that he is doing 1 A grade work. The results of the re-examination at the Clinic do not confirm this report. If the work he is doing may be called 1 A work, it is of a very inferior quality. In my opinion Abraham's mental deficiency is so marked that he will never be able to read and write sufficiently well to use these acquirements successfully as tools, *i. e.* he is not educable. It is possible to teach him to perform simple tasks only under supervision. Therefore, future institutional care is recommended for this boy because it is impossible for him ever to become self-supporting.

There is no reason to suspect that Abraham's mental deficiency is hereditary, nor are there any facts indicating an arrest of development *in utero*. The boy's mother does not appear to be very intelligent; nevertheless, from casual observation, there is no reason to suspect feeble-mindedness. This boy's mental deficiency can therefore not be ascribed to any specific cause. It is congenital and due to general physiological retardation. The same causes which brought about the physiological retardation in teething and in the instinctive reactions of walking and talking, are undoubtedly responsible for a permanent cerebral arrest, resulting in mental deficiency.

Abraham's case is of interest because it serves to demonstrate the value of the Witmer formboard as a testing device in detecting mental deficiency and in

determining a prognosis of social incompetency. The formboard is a test which normal children four years of age are able to perform successfully on the first trial. Abraham's performance of this test was so poor that Dr. Young immediately suspected mental deficiency, although it had escaped the notice of the boy's teacher and the authorities of the school. Dr. Young reports that Abraham failed to comprehend the task set for him, and that he placed the blocks over the recesses in a haphazard manner without any attempt whatever to insert them in their proper places. It required nearly twelve minutes to teach him to perform this test, which the average seven and a half year old boy will perform in twenty-five seconds. According to Dr. Young's norms based on the best record of three trials, the poorest 20 per cent of boys seven years and three months of age perform this test within the limits of thirty-two to forty-five seconds, without any assistance whatever. At the time of the re-examination in October, Abraham was eight years and three months of age. His best time was forty-two seconds after having performed the test eight times previously. The poorest 20 per cent of boys of this age in one of three trials perform the test within the limits of twenty-eight to thirty-seven seconds. This quantitative comparison gains in significance when we keep in mind that this boy had to be taught how to perform the test; and that even then, after a number of trials, he was unable to measure up to the age group to which he belongs. Abraham's inability to measure up to the norms cited is partly due to a lack of motor control and poor co-ordination, but mainly to deficient form recognition, deficient distribution of attention, and deficient analytic attention.

The fact of greatest significance with reference to Abraham's reaction to the formboard when he was first given the test by Dr. Young was his inability to comprehend the task set for him. That his lack of comprehension is a permanent defect, and has always been present, is, in my opinion, confirmed by the fact that when the cylinder test was placed before Abraham he was as much at a loss to know what was required as when he was instructed for the first time to replace the forms of the formboard.

This lack of comprehension I believe to be due to deficient intelligence. The formboard furnished a new problem for this boy, which he was unable to solve, but which four year old normal children can solve. Furthermore, this inability to comprehend a new situation is so marked in Abraham's case that it will be impossible for him ever to occupy a position in the affairs of life.

His inability to pass the formboard test revealed this deficiency at once and to such a marked degree that it seems to me that the Witmer formboard is not only of value as a testing device in detecting mental deficiency but serves as a means for a prognosis of social incompetency.

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Instructor in Psychology.

XXIII

Enoch, an eight year old boy, was brought to the Clinic by his guardian and the school nurse. Although he had attended a kindergarten for a year and entered the first grade at six years of age, he was still in the first grade at the time of his transfer to an orthogenic class. His backwardness in school and the fact that he had failed to pass the mental tests necessary for entrance to Girard College caused his guardian to bring him to the Psychological Clinic.

The preliminary examination was rather inconclusive, since his guardian had no definite knowledge of the child's family history. He had been a healthy baby, but did not begin to walk or talk until two years old. His guardian thought that this backwardness was due to neglect, the child's mother having

died during his infancy. Her death closely followed the death of the father from tuberculosis. Enoch plays with children of his own age, but allows them to impose upon him. Such a history shows a doubtful heredity and infantile backwardness, but no specific indications of feeble-mindedness.

During this first examination Enoch was given the formboard and cylinder tests, work with color cubes, and the Binet test. He was successful with the formboard test, but it was done very slowly and similar blocks were confused, showing deficient analytic attention. His failure to solve the cylinder test was due to poor analytic attention and poor distribution. He had twelve final errors at the end of seven minutes and fifteen seconds. He succeeded on the second trial, using the trial and error method. The result of the Binet test showed that his basal age was five years and mental age score seven years four months. However, his general behavior, lack of energy, poor analytic attention, poor distribution of attention, and his general appearance, caused Dr. Witmer to give a tentative diagnosis of not normal—a high grade imbecile, probably of tubercular origin, although no qualitative feeble-mindedness was shown; and to recommend a school visit, medical examination, and psychological re-examination.

The school visit was made during the following week. Enoch is in a special orthogenic class, consisting of backward boys taken from the first and second grades. Reading and drawing lessons were observed. Reading was taught by the Aldine method. Drawing involved measuring, tracing, and coloring. Enoch's work showed his backwardness quite definitely. In reading he failed to recognize *some*, *glad*, and *sway*, although he read correctly *come*, *way*, and *away*. About five minutes were spent trying to teach him *sway* by prefixing *s* to *way*, but without success. He misunderstood the directions for drawing. He was slow in comprehending what was to be done and his attention wandered frequently. The teacher said that Enoch's slowness was partly offset by perseverance. She thought he could be helped in her class, but a large amount of individual attention would be necessary.

The medical examinations—eye and Wasserman—were negative. The boy showed no stigmata of tuberculosis.

Enoch returned to the Clinic for re-examination during the following month. At this time he still confused similar formboard blocks, and used the trial and error method in the cylinder test; but he showed good reasoning and imageability in the Healy completion test and work with design blocks. His slowness was evident in all of these tests, but especially in reproducing designs. With the Goddard adaptation board Enoch's slowness was again apparent. His eye could not follow the proper space quickly enough, so that his failures almost equalled his successes. On the whole Enoch made a very much better impression during this examination than during the previous one. He seemed more wide awake and active. His work with the various tests given was of average quality, although the time required to complete them was above the average.

On the basis of these examinations Dr. Witmer diagnosed Enoch as at present normal but extremely slow and somewhat dull. He noted that the amount of retardation would probably increase and ultimately result in feeble-mindedness. This case illustrates the futility of trying to make a final diagnosis on incomplete data. Dr. Witmer's tentative diagnosis of feeble-mindedness was discarded when further examination proved more encouraging, and retardation was shown to be less than it had at first seemed. Dr. Witmer recommended that Enoch remain in the special class, and also receive orthogenic treatment from the Clinic, thus lessening the probability of ultimate feeble-mindedness.

LILLIAN MOORE, *Senior in Education.*

REVIEWS AND CRITICISM.

Bugle Calls of Liberty, Our National Reader of Patriotism. Compiled by Gertrude Van Duyen Southworth and Paul Mayo Payne, M.A. Syracuse, N. Y.: Iroquois Pub. Co., 1917. Pp. xii+179. Illus.

It is not the habit of THE PSYCHOLOGICAL CLINIC to review elementary school books, but the unusual merit of this reader justifies a departure from custom. "Bugle Calls of Liberty" is more than a text book for teaching reading. It is a valuable piece of testing material, which can be used in the clinical examination of adults, as well as children from the fifth grade up. Especially in the testing and teaching of articulation has the need been felt for a book of this kind, whose emotional power could be relied upon to bring out, for instance, the best and the worst phases of a chronic stammer.

The collection opens very appropriately with Patrick Henry's speech to the Virginia Assembly on March 23, 1775, more apt today than ever in its challenge,— "Is life so dear or peace so sweet as to be purchased at the price of chains and slavery?" The Declaration of Independence is here, and Franklin's speech for the Constitution; Daniel Webster's oration on "Liberty and Union;" two of Abraham Lincoln's short and perfect addresses; Viviani's speech on the Battle of the Marne, and Lloyd George's "Through Terror to Triumph." A few poems are included among the prose,— "The Star Spangled Banner," "The Blue and the Gray," and "Barbara Frietchie." President Wilson's message of April 2, 1917, has a rightful place here, with its memorable words,— "But the right is more precious than peace, and we shall fight for the things we have always carried nearest our hearts—." Lastly comes Secretary Lansing's address at Madison Barracks on July 29, 1917, when he said to the Reserve Officers' Training Corps,— "There is no higher praise that can be bestowed upon a soldier of the Republic than that he served his country faithfully and trusted in his God. Such I earnestly hope will be the praise to which each one of you will be entitled when peace returns to this suffering earth and mankind rejoices that the world is made safe for democracy."

The Boston Way, Plans for the Development of the Individual Child. Compiled by the Special Class Teachers of Boston. Concord, N. H.: The Rumford Press, 1917. Pp. 127.

This book is the united work of the special class teachers of Boston, edited by a committee of their Club, and published in the hope that it will help mothers and teachers to a better understanding of the backward child. It is, in effect, a very complete syllabus of the training given in the Boston Special Classes. Sense training leads the way, and a number of exercises and games are given for the development in turn of each of the special senses. Motor training comes next, with a goodly list of physical exercises, followed by indoor and outdoor games, folk dancing, and music. Then come the academic branches, ending with drawing. Domestic science follows, then garden and farm work, and various manual occupations, including basketry, cobbling, sewing, knitting, etc. Manners are by no means overlooked in the child's training, and the simple rules of courtesy are set forth in a clear form for teaching. Three different programs are given for a day in a special class, and the book closes with a concise bibliography.

It would be an exceptionally gifted mother who could make a wise choice out of so rich an offering of suggestion. Special class teachers, however, who are already trained in discrimination, will find much in the book that they may add to their own resources.

A. T.

The Psychological Clinic

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VOL. XI. No. 8

JANUARY 15, 1918

CLINICAL STUDIES OF FAILURES WITH THE WITMER FORMBOARD.

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INTRODUCTION.

In 1915-16 H. H. Young¹ made the first extensive study with the Witmer Formboard and used the results from testing 1474 normal boys and 1375 normal girls of all ages for a preliminary and basic standardization of normal children.

The object of the following investigation was threefold; (1) to study the formboard as an educational device; (2) to analyze failures so as to determine why a subject fails and what his failure means; and (3) to get one who has failed, to do the test with a minimum amount of teaching.

No attempt was made to examine a large number of children. The investigation was not interested in the standardization of results or in standard procedure, but in learning what difficulties the formboard presents, what causes failure, and what failure means in relation to diagnosis. Wherever children were tested in a school, the request was made that the worst in the room be sent. That is, failures were not selected from a miscellaneous number who were offered for the test, but were found by examining the youngest and most backward pupils in the lowest grades and kindergarten of two public schools and a Montessori school, and the most apparently backward children who could be found about a small social center.

Some children who failed, as well as some very young children, were given instruction. This is reported under each case. In general, failure was determined arbitrarily by the fact that the trial was left as finished when one or more blocks were left unplaced or incorrectly placed, or that the child received some assistance, or more than the standard instructions as given in the method of procedure.

METHOD OF PROCEDURE.

In the initial presentation of the formboard to all the children but case 1, the standard method of procedure of Young¹ was followed exactly except in two points: (1) the subjects were selected; (2) they were not required to stand. The different places in which they were found made it necessary to use the tables and chairs that could be obtained. In every case, however, the child was seated so that he could reach the blocks without strain or distraction. The light was always the best obtainable. In the case of successes, Young's standard method was not departed from except in the two points mentioned. All three trials were given and the standard data collected, with such additions as will be described under the head of "data collected." In the case of failure, the method was varied to suit the age or to meet the difficulty encountered. The amount and kind of assistance and instruction given were standardized and graduated. In some cases very little was given. In a few cases so much help was given that it amounted to showing the subject exactly what to do. The attempt to do exactly the same thing for every child was for the purpose of making the results comparable. However, in very few cases were two or more children given exactly the same amount of instruction. The lists given below consist of the instruction given, from the minimum amount, up to the actual placing of the blocks for the child.

The board was laid before the child with all the blocks correctly placed, and the child was allowed to see the examiner take them out and put them in the tray. The following steps were taken as needed, but only as much as needed. In case what was said or done did not have any effect the next step was taken.

1. "Go ahead, or "All right," or "Ready."
2. The original instructions were repeated or the examiner simply said, "See how quickly (or fast) you can put them back."
3. If the child picked up a block and began,—tried to place it, he was allowed to work until he gave up.
4. If the child did not begin after the repetition of the instructions and sufficient urging and encouragement, the following procedure was followed, using only as much of it as was absolutely necessary, under the condition that the minimum amount of instruction should be given.
 - (a) Examiner picked up block 6 and handed it to the child.
 - (b) Examiner said, "Place it," or "Put it back."
 - (c) If the subject tried to place the block and persisted without success indefinitely (beyond ten minutes) and the quality of the

performance warranted it, the examiner interfered and the next step was taken.

(d) If the child threw the blocks away or put one in his mouth, it was handed to him until it was clearly seen that he would go no further; or if he simply quit and refused, the examiner took the block, pointed to the recess and handed the block back to the subject. This was usually enough. In the case of a few babies and one or two others it was necessary to do this.

(e) If the blocks were placed in a random fashion over the face of the board, the trial was called a failure and the teaching began as described in the preceding paragraph. If showing how to place block 6 was not sufficient, after the examiner was sure the subject could place that one, he added 1 and taught the two until there was no doubt about the ability to place them. Then 2 was added, then 4, then 3 and 8 were taught in a similar way; then 7 and 9, 10 and 11; thus taking the two or three that were confused and teaching them together until there was certainty in placing.

(f) If after correctly placing one or more blocks the child refused to go on, he was urged by saying, "Go on, finish it," or "Put the rest back."

(g) If he had trouble with any one block, he was allowed to work as long as he would, until it could be called an actual failure.

(h) If he failed and gave up on any block, the trial was counted a failure. The examiner then corrected all the errors and without comment started the next trial.

(i) If on the third trial the child could not place one or more blocks correctly, the examiner said either, "Look at it carefully," or "Turn it around." If this had no effect the examiner took the particular block and turned it and then handed it back. If it was not placed the examiner took the block and placed it, then handed it back and said, "Now you put it in."

(j) If the child, on the third trial, persisted in trying to place the block in one place without looking around the examiner said, "Look all around."

There are other details of teaching which were used with individual cases, and described in the case reports. The general method, so far as it can be made standard, was as described.

DATA COLLECTED.

As far as possible the following record was made: Name, sex, chronological age, school age, teacher's estimate, whether failure or not, diagnosis, rating on five point scale, formboard time, nationality, social class, physical characteristics, and qualitative statement.

In case of failure, further clinical examination was made using one or more of the following tests: peg-board, color discrimination, design blocks, Witmer cylinders, hearing, vision, memory span, Healy completion test, Binet (Terman) scale, reading, writing, number work. The data collected from these tests was used in making the diagnosis and summation rating.

REPORTS OF CASES.

As far as possible all of the cases are treated alike, especially in the order of presentation of the material. Case 1 is an exception to this, as the study was made as a separate investigation, as noted in the report. In the case of school children the school rating or teacher's estimate was given. By the type of failure is meant the type of performance. When it is recorded that the failure type is one of "imageability" it means that, judging from the performance, the failure is due more to lack of imageability than to any other factor although all the other disabilities may be contributing to the failure. There is no thought or intention of intimating that failure is due to any one lack or disability or that an ability can be isolated in function. In the rating, in the technical diagnosis, every child is compared with others of his own age. The selected cases are reported to illustrate the various types of performance and to bring out the abilities which make success possible and the disabilities which make failure possible.

The two reports selected for presentation are of interest because of the possible comparisons and contrasts. The first is a normal one year old baby and the second a twelve year old idio-imbecile. Both fail for the same reason, and the second is mentally of the same age as the first child when she first succeeded with the formboard. It is unfortunate that neither of these can be located on Young's standardization. The other failures, unless they were below all of Young's, were located thus: shortest of Young's successes, in group IV of $4\frac{3}{4}$ years; shortest of Young's failures, from group I of $4\frac{1}{4}$ years to group V of $8\frac{3}{4}$ years.

CASE 1.

Girl. Diagnosis: Normal. Age: 13 mo. School age: 0. Rating: 3.5. Formboard Time: See report. Nationality: American. Social Class: Professional. Physical Characteristics: Normal. Young's Standardization: Shortest of successes: Below all. Shortest of failures: Below all. Types of Failure: Lack of understanding and persistent concentration of attention. Why Selected: To determine how long it would take the baby to teach herself to do the formboard test.

This study was made for the purpose of observing the part played by the several abilities as they develop in the very young child. Margaret had had no experience with the formboard and little experience with other blocks. As will be seen in the description of the method as applied to this case, the minimum amount of instruction was given. For six months the child worked with the test until she was successful. With few exceptions the board was placed before her on a small table and she sat or stood before it. The task could not be given to her daily on account of the occasional absence of the examiner. She was allowed to work or play with the board only under supervision during the first four months of the experiment. During the last two weeks it was placed on a low cabinet where she could have it all the time. No one besides the investigator was allowed to present the test to her, and she was not allowed to see anyone else try it. During the first four months, after each presentation, she was permitted to play with the board as long as she would. Thirty tests were made during the first four months, from May 30th to September 28th. After that she did not see the board for a full month. From November 1st to 12th, when complete success came, she had the board to play with as she pleased, but without assistance and never with other children.

Test 1. May 30, 1915. Age 12 mo. 18 da.

(a) Before showing the formboard all the blocks were placed in the tray. It was then put before her and the examiner said, "Put the blocks back." This was repeated twice. She did nothing.

(b) The circle was picked from the tray and the examiner said, "Put this one in." She took it, looked it over, and handled it as she would any other article, then put it in her mouth. The examiner insisted, "Put it in." She did not try.

(c) The examiner placed the circle in its recess, handed it to her and said, "Margaret do it." She took the block and put it in her mouth.

(d) Without permitting her to see what he was doing, the examiner placed all the blocks in their recesses with the exception of the circle. He then put the board before her, handed the circle to her and said, "Margaret, put it in." She took the block but did nothing with it. The examiner then took it, put it in its recess and pointed to it. He then took it out, handed it to her and said, "Margaret do it." *She quickly put it in.*

(e) With all the blocks in their recesses the examiner took the circle, placed it on the board just beside the recess and pushed it in.

He then placed it again in the same position and said, "Margaret, do it." *She quickly did it.*

(f) The examiner placed all the blocks in the tray. Margaret picked up the circle and tried it in the diamond recess. She then lost interest and tried to take the examiner's pencil and paper. She threw the blocks around the room.

The circle was chosen because it is the simplest of the forms. It requires less information, less coördination, than any of the rest, and is attractive. In (a) above there were several possibilities. She may not have understood what was asked. She most likely did not associate any of the blocks with any of the recesses. In (b) she did what she needed to do, took the block and examined it and the mouth was the proper place to put it. She could not associate it with the recess as there is little resemblance at first presentation. In (c) one would expect her to follow the lead and at least place the block on the board somewhere. But she still did not have enough information or did not understand what was wanted. There were too many recesses. In (d) the number of choices was cut to one but she did not understand the command. When the examiner placed the block for her the command was explained and interpreted and she quickly responded. Trial (e) was not necessary but it served as a review of the fact that the block and the recess belonged together. Trial (f) showed that she had reached the limit of persistence of attention.

The coördination of hand and eye movements is most important in this early feat of coördination. An occasional glance might be sufficient to locate and associate the block and its recess, but the hand movement would have to be fairly precise to bring success. The performance shows that the command and the demonstration were necessary because of the small range of observation and distribution of attention. Attention is forced by the procedure but the period is very short. The first test did not last longer than three minutes.

Test 2. May 31, 1915. Age 12 mo. 19 da.

(a) With all the blocks in the trough, the board was placed before Margaret with the command, "Put the blocks all back." She pulled at the board and picked up blocks at random, but always picked up the circle first.

(b) The examiner picked the circle from the tray, handed it to her and said, "Put this one in." She took it and looked at it as she turned it over and over.

(c) The examiner then took the circle and said, "See Daddy do

it," and placed it. He then handed it to her and said, "Margaret do it." She quickly placed it.

(d) With all the recesses filled except 6, the board was put before her. The circle was given her with the command, "Margaret put it in." She did it.

(e) With all the other blocks in their recesses, the circle was placed beside its recess and the command given, "Push it in." She did it.

Very definite progress is seen in this second presentation. The amount of teaching is cut down. A decided improvement in analytic concentration of attention in a very elementary form is shown by the very certain success when the number of choices is increased.

Test 3. June 1, 1915. Age 12 mo. 20 da.

(a, c, d) Procedure and result the same as on the first two days.

(b) The examiner took the block from the tray (all recesses being empty) and handed it to her saying, "Margaret put it in." She placed it with very little hesitation and without trial and error. She then took the cross and tried to put it in the circular recess.

Here is shown another definite stage of improvement. She selected the proper recess from many empty ones. The simplicity of the task and the first attempt to place another block are to be noted.

Test 4. June 2, 1915. Age 12 mo. 21 da.

There was no variation from the third day except that she tried to put the circle in a triangular recess.

Test 5. June 3, 1915. Age 19 mo. 22 da.

Could not get any response.

Test 6. June 4, 1915. Age 12 mo. 23 da.

(a, b, c) Procedure and success as before. She tried to put the circle in the semicircular recess and in several other places, and then lost interest.

(e) She picked up the circle and rolled it across the floor. She then tried to put it in the recesses for cross, triangle, and star; took the diamond and star, put them on the floor, and then walked away with the circle.

In (a) the attempt to put the circle in other recesses and in (b) her attention to other blocks were significant in that she was showing interest in other blocks and that her distribution of attention

was increasing. The repeated success of (b) shows that the success was not accidental.

Test 7. June 9, 1915. Age 12 mo. 28 da.

(a) The examiner put all the blocks in the tray and told her to put them back. She picked the circle and placed it without trial and error.

(b, d) Procedure and success as before. She then took out a few blocks, emptied the board, and carried the semicircle away.

This was the first time she took a block from the tray and placed it; it was also the first time she tried to take the blocks out of the recesses, showing that she had some idea of the relations.

Test 8. June 14, 1915. Age 13mo. 3 da.

(a) Procedure and success as on the 9th. She tried the ellipse in the square and circular recesses and then in its own recess.

The other trials were omitted. On the 9th she seemed to see some of the relations and now she applied this knowledge in correctly placing the ellipse after two trial errors. There was little analysis yet, but still it was not entirely trial and error, unless the success on the third trial was accidental. The procedure was largely confined to offering her the board with all the blocks in the tray.

Test 9. June 15, 1915. Age 13 mo. 4 da.

(a) Procedure and success as before.

(c) The examiner handed each of the blocks to her in succession. She threw them down at once with the exception of the circle. She held it and looked at it for about five seconds and then placed it correctly.

Test 10. June 16, 1915. Age 13 mo. 5 da.

(a) Procedure and success as before, three times in succession. She tried to put the circle in the semi-circular recess but then went to playing and throwing the blocks about.

Test 11. June 18, 1915. Age 13 mo. 7 da.

(a) She took the circle from the tray and placed it correctly.

(b) The examiner put the circle back in the tray with the other blocks, then took it out, handed it to her and said, "Put it back." She did it.

(c) The examiner placed all the blocks in the recesses without

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permitting her to see the operation, handed her the circle and said, "Put it back." She did it.

(d) The examiner repeated trial (a). She played a while and lost interest.

Test 12. June 20, 1915. Age 13 mo. 9 da.

No apparent progress except that she took all the blocks out and placed them beside her on the chair.

Test 13. June 21, 1915. Age 13 mo. 10 da.

No progress. The time was spent playing with the blocks.

Test 14. July 1, 1915. Age 13 mo. 20 da.

(a) With all the blocks in the tray she picked out and placed the circle, then passed out the blocks to the examiner, one by one, threw them around the room and tried to put the circle in the square and elliptical recesses. When other blocks were handed to her she threw them away.

Test 15. July 4, 1915. Age 13 mo. 24 da.

No new developments. Trial (a) only was given.

Test 16. July 10, 1915. Age 13 mo. 29 da.

(a) With the board empty she took first the circle and then the star and placed them correctly without trial error. She then wanted to throw the blocks. She sat on the board, turned it over and tried to place the blocks on the under side.

Here we see another definite acquisition. Of her own accord she picked the star, an attractive form, and placed it correctly. That she tried to place the blocks on the under side of the board indicates improvement in understanding.

Test 17. July 15, 1915. Age 14 mo. 3 da.

Performance of the tenth repeated exactly.

Test 18. July 28, 1915. Age 14 mo. 16 da.

(a) With all the blocks in the tray she took the circle and placed it. She then tried it in other recesses, took it out and put it back four times in succession. She tried the star in its recess but could not make it go down. She then took the other blocks from the tray and passed them to the examiner one by one and sat on the board.

Test 19. July 30, 1915. Age 14 mo. 18 da.

(a) She took the circle from the tray, tried it in the semicircular and square recesses, then on the cross and then in its own recess.

Test 20. August 2, 1915. Age 14 mo. 21 da.

(a) She took the hexagon (10) and tried it in the diamond (11) recess, the semicircle (5) in the ellipse (4). She then put the ellipse on the hexagon and tried to put both in the diamond recess.

(b) Without permitting her to observe, the examiner put all the blocks in their recesses, handed the star to her and said, "Put it back." She placed it without error after a little fumbling.

Test 21. August 10, 1915. Age 14 mo. 29 da.

This test was a complete failure. She showed no inclination to try.

Test 22. August 11, 1915. Age 14 mo. 30 da.

The examiner presented the board with all the blocks in their recesses. She took out all and then put the equilateral triangle (9) back in its recess. She then tried to put the cross in the circular recess and the circle in the cross recess but lost interest and quit.

Test 23. August 13, 1915. Age 15 mo. 1 da.

When all of the blocks were in the tray the examiner handed the circle to her and she placed it correctly. He then gave her the star and she put it on its recess but not down in it.

Test 24. August 20, 1915. Age 15 mo. 8 da.

With all the blocks in the tray she took the circle, placed it, took it out again, and tried to put the star in the circular recess. She then took the cross and tried it in the circular recess, and then put the circle back in its recess.

Test 25. August 24, 1915. Age 15 mo. 12 da.

No progress or change to report.

Test 26. August 25, 1915. Age 15 mo. 13 da.

(a) She took the circle and placed it, tried it in the recesses for semicircle, ellipse, cross, and star, then put it back in its own recess. She took the semicircle and star and put them on but not down in their own recesses.

(b) With all the blocks but the star and semicircle placed, the examiner gave her first the star and then the semicircle saying, "Put this one back." She refused and ran away.

In these recent tests she seemed to think that if the circle would fit one recess it should fit all, so she tried it around the board. This shows poor imageability, but increased association and understanding. On the second of August there was indication that she was beginning to think of the other blocks in the same way that she did of the circle. There was indication of an attempt to use the trial and error method in working with other blocks than the circle. On the second she placed the star, and on the eleventh the triangle. She now reversed the association and tried the other blocks in the circular recess. On the thirteenth and twenty-fifth, she definitely connected the star and semicircle with their recesses.

Test 27. September 7, 1915. Age 15 mo. 26 da.

With all the blocks in the tray she took the cross, semicircle, and circle and tried to place them but failed. This is the first time it was certain that she understood when told to take the blocks out and put them back, for she repeated the effort when told to do so. In taking them out she took them one by one from the board to her chair, and when only three were left she turned the board over. When she was told to put the blocks back she tried a few but lost interest and quit.

Here is shown definite interest, increase in understanding, increase in distribution of attention, and increased persistence of attention.

Test 28. September 17, 1915. Age 16 mo. 5 da.

The examiner placed the board before her with all the recesses filled and said, "Take the blocks out and put them here" (indicating the tray). She put them all there except the cross and the rectangle. The examiner then said, "Put them back." She began picking up the blocks, placed the circle and cross, and quit.

Test 29. September 26, 1915. Age 16 mo. 14 da.

The examiner placed the board before her as on the 17th. She took all the blocks out and placed them in the tray. He then told her to put them back. She put all on the board but only the circle in its recess. She worked longer than at any previous test and seemed to like to take the blocks out and put them back on the board.

Test 30. September 28, 1915. Age 16 mo. 16 da.

With all the blocks in the tray the examiner gave her the circle and she placed it. He then took away the circle and gave her the cross. She tried to force it into the circular recess. The examiner then put the circle in its recess and gave her the cross. She took the circle out and again tried to force the cross into the circular recess. She then took the semicircle, star, and cross and tried all in the circular recess.

The results so far are about what would be obtained from a low grade imbecile on the first trial with the formboard. There is about the same amount of interest, persistence, and imageability. This is the first time Margaret took all the blocks out and placed them all back on the board. This certainly shows increase in understanding and in persistent concentration of attention.

Test 31. November 12, 1915. Age 18 mo.

During the day it was observed that Margaret had put all the blocks back in the correct recesses. It was known that they had been scattered about the room before and that no one else had replaced them. The examiner immediately placed all the blocks in the tray, put the board before Margaret and said, "Margaret, put them all back." She worked for nine minutes with many trial errors, and placed all without final error. During the nine minutes many things distracted her. The coördination was poor, the rate of energy discharge was very slow. Most of the nine minutes were spent in looking about, handling the blocks, shaking them, and jabbering to the examiner, but when she made up her mind to place a block she did it relatively quickly. This same condition persisted throughout the trials which follow. A large part of the time was spent in playing. From this time on many unrecorded tests were made.

On December 25th all were placed in three minutes, on April 24th, after she had not seen the board for five weeks, they were all placed with one trial error in 110 sec. On August 10th the time was 70 sec., on November 10th three times in succession it was 45 sec., and on January 15, 1917, when she was aged 32 months, it was 35 sec.. Since then the time has not been improved and there is no attempt to speed up. From the first success, most of the time was spent in playing between placing the blocks.

CASE 15.

Girl. Diagnosis: Idio-imbecile. Formboard Time: F. 196—
F. 436. Age: 12 yrs. 4 mo. School Age: Kindergarten. Rating: 1.2.

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Nationality: Italian. Social Class: Poor shopkeeper. Physical Characteristics: Cephalic index, 79.03; head girth, 52.9. Talks little more than a child of two. Hard palate high; protruding canines and wide frog mouth; leering, wolfish appearance, slant eyes, and nystagmus in both; extreme knock knees, spraddle legs and feet, small ears, and awkward, babyish gait. Very thin. Young's Standard: Shortest of successes: below all. Shortest of failures: below all. Type of Failure: Lack of understanding and persistent concentration of attention.

TESTS.

Formboard.

I. Blocks were fingered in monkey fashion. After the directions were repeated she placed 3, 6 and 8 and put the rest on top of the board.

II. She again put the blocks on top at random. When 1 was given to her she placed it over recess 2, but corrected it when the examiner said, "No." Nos. 2 and 4 were treated similarly. All of the blocks were then placed with many trial errors, 7 would not have been placed had not an observer said, "She has it backward." Time approximately eight minutes, five spent in placing 7.

III. Repetition of trial II. Time 436 sec.

Further examination had to be made a week later when the formboard was given again.

Formboard (second test).

I. A better performance, but she still persisted in removing correctly placed blocks. She compared the blocks by fitting them together. There was improvement in distribution of attention. No assistance except urging was given. Time 523 sec.

II. Improvement in selecting and rejecting and in memory of the simpler forms but no persistence. Time 116 sec.

III. Only three trial errors, improved interest evidenced by singing and more rapid work. Time 99 sec.

Peg-board.

Random pegging with very poor coördination. Qualitatively a two year old performance. Time 148 sec.

Design Blocks.

Failed on all but a row of red blocks. Could match colors if attention was held.

Witmer Cylinders.

I. Random placing with poor coördination. The examiner placed all but three, one of which she placed correctly. The other two were interchanged. She was then told which were right and she corrected the two. In the same way the four largest were placed with two trial errors, four scattered with no errors, then five with four errors, then five long cylinders with four trial errors, then five long ones with small diameters with two trial errors. All were now taken out and she began again. Her attention wandered. She said "bang" as she placed each one. When told to correct two that were wrong she took them out. The examiner then removed five that were wrong. After very much assistance all were placed in 499 sec.

II. Trial I was repeated. She tried to force large into small, and left small cylinders in large recesses. Occasionally she leaned back and laughed and hit the cylinder a hard blow. Time 452 sec.

Binet (Terman revision).

Mental age score, three years. Intelligence quotient, 24.3.

This girl is obviously an idio-imbecile. She plays about with other children, is imposed upon and cries at nothing, like a two year old child. Her speech is very incoherent. She has been in the kindergarten all her school life and she is improving a little. Her brother of nine years, in the fourth grade, has the appearance of a mongolian and some of the marks of the high grade imbecile. The girl is always dirty, scantily dressed, and exhibits herself anywhere. On the five point scale the following ratings are given: energy 2, rate of energy discharge 2, resistance to fatigue 2, health 2, control 1.5, coördination 1.5, initiative 2, complexity of responsiveness 1.3, vivacity 4, analytic concentration 1.3, persistence 1.5, distribution of attention 1.3, imageability 1.2, understanding 1.3, memory 1.4, and intelligence 1.2. This is a good illustration of the fact that control, coördination, and general vitality may be very low, but may not produce failure without lack in some other respect.

GENERAL ANALYSIS.

It will be seen from table III that there is little, if any, relation between age, formboard time, diagnostic rating, and diagnosis (in cases of this investigation) except the direct relation between summation rating and diagnosis. Table II shows the general tendency for time to decrease with age for 188 subjects. A summation of all available cases is not possible on account of the incomplete record of formboard time for the failures who came to the Clinic. Table III is

given to afford a short summary of these studies rather than to attempt to prove anything.

H. H. Young had a total of 182 failures out of 3031 cases examined, or 6 per cent; 75 out of 1549 boys or 4.2 per cent, and 107 out of 1422 girls or 7.2 per cent. Of the 122 failures, 72 per cent occurred on the first trial only, 11 per cent on the first and second trials, 3 per cent on the third trial, and two children failed on all three trials. In this investigation all but one failed on the first trial. In some cases there was only one trial, as the strain of teaching wore the child out. Ten failed on the first trial only, none on the second only, none on the third only, six on both first and second, one on the first and third, and seven on all three trials.

Although this investigation was not undertaken to find the failure level for the formboard, there are many things in the results which make it possible to locate that level approximately. In Young's investigation, in which he tested all children who were sent to him, taking every child in a school room, he found that out of fifty children under five years of age, twenty-four succeeded on the first trial and twenty-six failed. It must be remembered that he set a time limit of three minutes and called all failures who did not succeed in that time. In the present investigation, where the subjects were selected with the purpose of finding failures as soon as possible, of the thirty subjects under five years of age, sixteen failed and fourteen succeeded on the first trial. In Young's investigation, of the one hundred subjects over five years of age but less than six, seventy-eight succeeded on the first trial and only twenty-two failed. In the present investigation, of the twelve subjects over five but less than six, eight succeeded and four failed. These twelve must be remembered also as selected for failure. All of this indicates that the majority of children over five years of age may be expected to succeed with the formboard on the first trial. The fact that the subjects of this investigation were selected simply emphasizes this point, since in spite of the selection, twice as many succeeded in the sixth year.

Of the 1400 cases in the Psychological Clinic of the University of Pennsylvania who were examined with the Witmer formboard since it has been in use, 137 failed on one or more trials. This is roughly 10 per cent. Tables IV and V present an analysis of these failures. Of the eighteen diagnosed as normal, sixteen were under five years of age. Of the one hundred diagnosed as definitely feeble-minded, 69 per cent were *over* five years of age. Young tested very few children under five years of age, the median of his failures coming at 6.75 years. However, 80 per cent of his failures were between

TABLE I.—YOUNG'S SHORTEST TRIALS.

Age	No.	I	II	III	IV	V
4.25	8	34-36	42	50	53	60
4.75	16	22-36	35-37	39-42	43-47	53-103
5.25	34	20-26	27-31	32-36	37-44	46- 67
5.75	44	16-25	26-28	29-32	33-38	39- 92
6.25	101	20-26	27-29	30-32	33-38	39- 76
6.75	106	17-23	24-27	28-31	32-37	39- 86
7.25	145	18-22	23-25	26-28	29-31	32- 56
7.75	143	15-20	21-23	24-26	27-30	31- 51
8.25	145	12-19	20-22	23-24	25-27	28- 42
8.75	140	13-17	18-20	21-22	23-25	26- 38
9.25	138	12-17	18-19	20-21	22-24	25- 40
9.75	161	12-16	17-18	19-20	21-22	23- 54
10.25	123	11-15	16-17	18-19	20-22	23- 30
10.75	133	10-15	16-17	18-19	20-22	23- 38
11.25	142	11-14	15-16	17-18	19-21	22- 27
11.75	148	10-14	15-16	17-18	19-21	22- 33
12.25	179	10-13	14-15	16-17	18-19	20- 30
12.75	163	9-13	14-15	16-17	18-19	20- 29
13.50	281	8-12	13-14	15-16	17-18	19- 30
14.50	172	8-12	13-14	15-16	17-18	19- 24
15.50	75	7-12	13	14-15	16-17	18- 27

TABLE II.—YOUNG'S SHORTEST TRIALS FOR FAILURES.

Age	No.	I	II	III	IV	V
4.25	10	29-49	53-60	65-68	72-75	118
4.75	16	28-35	42-45	50-61	78-92	105-119
5.25	18	26-28	38-41	45-50	56-61	68-202
5.75	14	26-27	36-39	49-50	54-69	73-110
6.25	23	24-29	30-34	34-37	41-45	48-103
6.75	22	22-27	29-31	33-38	40-57	58-102
7.25	18	20-25	25-30	32-34	36-40	41- 53
7.75	16	16-20	25-27	30-34	35-38	49-131
8.25	10	18-21	22-23	27-28	29-30	37- 40
8.75	6	23-24	32	36	51	52
9.25	5	21	22	22	25	25
9.75	3	17		22	23	
10.25	3	20		23		43
10.75	2	19		32		
11.25	1	21				
11.75	1	19				
12.25	1	20				
12.75	1	28				
13.50	1	16				
14.50	1	13				
15.50	3	13		20		43

TABLE III.—SUMMARY OF CASES REPORTED.

Age	Case No.	Diagnosis	Rating	F. B. Time
2.25	4	N.	3	501
2.75	3	N.	4	124
3.25	14	N.	3	183
3.75	7	N.	3.3.3	59
3.75	10	N.	3	345
4.25	16	N.	3.3.3	276
4.25	13	N.	3	44
4.25	23	N.	3.2	60
4.25	24	D.	2.4	94
4.25	17	N.	3.3.3	108
4.25	11	N.	3	420
4.25	19	N.	3.3	50
4.75	22	N.	3.3.1	263
4.75	18	N.	3.3	48
4.75	25	D.	2.3	111
4.75	20	D.	3.2	89
5.25	21	M. G. I.	1.4	41
5.25	9	N.	3	105
5.75	8	N.	3	88
5.75	12	M. G. I.	1.4	42
6.25	6	N.	3.1	63
6.25	5	D.	2.3	75
10.75	2	L. G. I.	1.3	59
12.25	15	I. I.	1.2	436

N.—Normal. D.—Doubtful. L. G. I.—Low Grade Imbecile. I. I.—Idio-imbecile. M. G. I.—Middle Grade Imbecile.

TABLE IV.—DISTRIBUTION ACCORDING TO DIAGNOSIS. CLINIC CASES.

	All		Under 5		Over 5	
	Number	Per cent	Number	Per cent	Number	Per cent
Normal.....	18	13.1	16	38.1	2	2.1
Deferred.....	19	13.9	11	26.2	8	8.5
H. G. I.....	4	2.9	2	4.8	2	2.1
M. G. I.....	11	8.0			11	11.6
L. G. I.....	24	17.6	5	11.9	19	20.0
I. I.....	51	37.8	6	14.2	45	47.3
S. I.....	8	5.8	2	4.8	6	6.4
Idiot.....	2	1.5			2	2.1

TABLE V.—TIME TYPES OF FAILURE.

Diagnosis	Complete	Under 60 Sec.	Over 120 Sec.
Clinic Cases:			
Normal.....	1	5	3
Deferred.....	7	2	1
H. G. I.....	1		1
M. G. I.....		2	2
L. G. I.....	10		2
L. I.....	23	4	6
Idiot.....	2		
Young's. No Diagnosis.....	1	92	11

the ages of four and eight. In the examination of 3037 subjects Young found 188 failures, or 6.2 per cent. The difference between this and the 10 per cent of the Clinic cases is due in part to the fact that those who come to the Clinic are already selected or suspected of deficiency, but also in part to the fact that the age groups are not at all parallel. Young's failures under five years of age are only .8 per cent of the total number examined, while the Clinic failures under five years of age are 3 per cent of the total number examined. Of all the failures available the mode comes at 4.75 years, the median at 6.75. However, Young had more under four years old, 26 per cent are under five years of age and 74 per cent under eight years.

Of the 19 clinic cases in which the diagnosis was deferred, which means that these cases are at least doubtful, 8 were over five years of age. The experience of the Clinic is that the tendency is for the diagnosis to go down rather than up in the cases of deferred diagnosis, so that the probability is that at least 75 per cent of these 19 cases are feeble-minded, especially those over five years of age.

As table IV shows, 69.1 per cent of the Clinic failures are over five years of age, 13.1 per cent are definitely normal, 73 per cent are definitely feeble-minded, and 13.9 per cent doubtful, making a probability of 86.9 per cent feeble-minded. Of the feeble-minded 44.5 per cent are lower than low grade imbecile, and 28 per cent are in the imbecile group. There is also a probability of 27 per cent normal. Of these 64.3 per cent are under five years of age. Of the 73 per cent definitely feeble-minded 85 per cent are *over* five years of age. Of the 86.9 per cent probably feeble-minded 78 per cent are over five years of age. Of the 16 per cent definitely normal 70 per cent are under five years of age. Of the 95 subjects over five years of age who failed, 89.5 per cent are definitely feeble-minded and there is a probability of 97.9 per cent. The number of cases is small but the indication of the tendency is supported by the study of the cases which follow. It is very likely that 98 per cent of those over five years of age, who are brought to the Clinic already under suspicion, who fail with the formboard, are feeble-minded, and that 89 per cent are definitely so. However, it must be remembered that these are selected cases, already suspected of feeble-mindedness. Yet the probability is that the examination of a larger number of apparently normal children over five years of age would support this to the extent of making the probability greater.

A treatment of the time results of these failures at the Psychological Clinic is impossible, as in many cases the record indicates no more than failure. Table V shows the approximate number of complete failures, those who failed under one minute, and those who failed after working more than three minutes. Of course all of the

FAILURES WITH THE WITMER FORMBOARD. 247

137 cases could not be used in this classification. Only those where there is good evidence of time record and of complete failure were used. However, the tendencies are evident from this incomplete table. Of the 137 cases (so far as can be seen) only 15 persisted more than three minutes on the first trial; only 13 worked less than a minute and quit; while 51 failed more or less completely, making it seem not worth while to record the time. Of those considered complete failures 84 per cent are definitely in the feeble-minded class with a probability of 98 per cent. Of the failures in one minute or less more than 50 per cent are probably feeble-minded. In the three minute class 27 per cent are probably normal, and 20 per cent definitely so.

The futility of comparisons based upon the time records of failures with the formboard is made obvious by a consideration of the difficulties encountered by the different subjects. If the formboard presented the same difficulties for each, the time would mean more as a measure of general ability. As it is, the time is a measure only of formboard ability. Young takes the shortest record of three trials as the index of formboard ability. This is challenged. It is not an index of the child's resourcefulness and intelligence, but is a composite result produced by his intelligence and the training received in his other trials. If all conditions could be equalized for every trial for every subject; if the attitude of every subject were the same, allowing for differences in ability to attend, etc.; if the attitude of the examiner were the same in every trial for every subject, then the shortest trial might be the index. But it seems as if these factors are equalized most nearly in the first trial and a careful study of that trial is most important.

In every examination the subject was told to see how *quickly* he could put the blocks back. The suggestion to hurry or do the test fast does not have much, if any, effect upon children under six years of age. Their movements are very deliberate and slow and there is no indication that the young child has the concepts of time and speed. With most children it is simply a matter of understanding the terms and the idea suggested. They are told many times a day to hurry, but they do not hurry. In the child of two to three years of age there is absolutely no response to the command to hurry. There may be some response from the child from three to six years of age, if the command is repeated urgently, but the response will be a quickening of the movements where the gain is of no advantage. Case 1, at the age of three years and six months, after much training with the formboard, when urged to hurry, will make quick movements of the hands after the block is selected and near the recess by slapping it down quickly, but she loses just as much time as ever in

picking up the blocks and finding the recesses. Her speed has improved through practice, but not because of any understanding of what it means to do the test fast. The older child gets the concept very slowly, especially before he goes to school where he has experiences of tardiness and its consequences, urging to be prompt in response to signals, urging to read faster, to hurry up and down stairs with others who are hurrying, hastening in games, and the rush home at meal time under the spell of the ravenous appetite of early school days. In the case of a few children of six or seven years of age the only response to the suggestion to hurry was the making of swift movements similar to those described above. This is the first noticeable element of behavior in line with the developing concept of speed; swift movements after there is no longer need for thought, studied imageability, etc., but no speed in the analytic process. Children who do try to hurry make slower records. Often the number of errors is not due to lack of ability to perceive form, but to blurred and incomplete perception due to rapid work.

To the second part of the first instructions, "Use both hands if you want to," there is no response of any consequence until from eight to ten years of age. All of the younger subjects work with the preferred hand, at best simply making the other hand assist in removing wrongly placed blocks or in passing blocks to the other hand. It can be quite definitely concluded that if a child of six, seven, or eight, uses both hands in selecting and placing the blocks, he has good initiative, originality, and planfulness, and that in this case the formboard aids in selecting an individual of more than average ability.

Two general classes of failures are found, the normal and the feeble-minded, but this classification can hardly be based upon the fact of failure or success alone. As has already been said, the child over five years of age who fails with the formboard is very likely to be feeble-minded, the child under five who fails may be feeble-minded, but the failure alone does not prove that, for more children between the ages of three and five succeed than fail. The failure may be indicative of the lack of development of an ability or a complex of abilities. In one child we will have one who lacks and in another one in whom the ability has not yet developed, and each may show the same symptoms, so far as formboard performance is concerned. If thinking and mental ability are dependent upon the functioning of the nervous system and particularly the brain centers and medullated fibres, it is possible that in a young child some of these centers are not yet developed enough to function adequately or the fibres are not yet medullated because of lack of the kind of experience necessary to develop them. Thus the dis-

inction arises as to whether a subject fails because of a congenital defect or because his experience has been such that his intellect is too small. His intelligence is affected by both.

No failures are due to lack of vitality, health, control, coördination, or dexterity, although performance is qualitatively affected by all. If a child is poor enough in any of these abilities to fail he would not be submitted to any sort of test. Most failures are due to some sort of failure of attention and particularly distribution of attention and persistent concentration of attention. In the cases reported in this investigation these two kinds of failures include three-fifths of all. There is a vast difference between concentrated persistence and simple persistence. Case 15, the idio-imbecile, is a fine example of this. She persisted but could not concentrate. This is so closely associated with failure due to lack of analytic concentration of attention that the two cannot be separated. She could not give enough attention to analyze the task. The least distraction threw her off. She recognized the recesses corresponding to the blocks and associated them very well, but the least impulse was sufficient to induce her to take out one already correctly placed and try it elsewhere. Yet she stuck to it.

Failure, therefore, means inability to give proper attention. This raises the old question,—what is attention? It is a state of consciousness in which some one object, or thought, occupies the center of consciousness to the relative exclusion of all other objects or thoughts. It is the focalization of consciousness in which experience is used in judging. If experience is meager, judgment is poor, and the performance correspondingly poor. Hence distractibility is a prime cause of failure of attention; but it is not the only cause. The stolid, dull, lethargic child with low vitality, without vivacity, not alert enough to have his attention caught by distractions, will also fail because of inability to attend. Here it may be said that he cannot give proper attention to the task in hand for exactly the same reason that he cannot be distracted. He cannot attend to anything. There may be several reasons for this. First, he may be feeble-minded; the cells of the cortex may be undeveloped, the association pathways may not be made clear, or there may be lesions in the cortex, in the inner nuclei, or among the fibres leading to the cortex. Secondly, the subject may be so young that the cells of the cortex are relatively undeveloped and the association pathways are not yet established. By the time this has come about there is sufficient ability in coördination to succeed with the task. This makes possible a very definite line of distinction between the two general classes of failures in which the causes are apparently the same. The feeble-minded child is very much like the very young normal child,

In many cases failure seems due to lack of imageability or understanding. However, if there is persistence enough, many children will succeed with poor imageability. Persistence in the trial and error method will bring success in spite of poor imageability. This persistence is indicative of some distribution of attention. It is reasonable that one may fail to understand the task because there is very poor form perception or imageability. There is a reciprocal relation between the abilities here. Although imagination is the most general and comprehensive of the powers of the mind, yet it is true that with poor power of attention, in any respect, there is poor imagination, and where there is poor imagination and distribution of attention, analytic and persistent concentration of attention are not possible. Distribution of attention may be defined as the ability to see the possibilities in a given situation; analytic concentration of attention may also be defined as the ability to select out the important and significant details of the situation. Therefore lack of distribution of attention is much more likely to produce failure, than lack of analytic concentration of attention or lack of imageability or associability.

It is apparent, therefore, that failure with the formboard is primarily a failure in some way of attention. From the standpoint of attention there are three things most necessary for the satisfactory and ready completion of this test: distribution of attention, persistent concentration of attention, and analytic concentration of attention. If the range of attention is too limited, no one can perform this test. That is, if attention is too fixed there is a tendency to obsession, the task is not grasped and the possibilities are not seen. On the other hand, if distribution of attention goes so far as to make it too widely dispersed, the difficulty is quite similar and the task cannot be completed. The highly distractible subject is an illustration of this. There is a middle ground, where there is a distribution of the attention sufficient to cover or grasp the possibilities, and yet where there is enough concentration upon the immediate part to complete it as an element of the whole. These things are observed in the behavior of the very young child. Both difficulties are likely to occur, the child may be easily attracted to other things and the next minute may be under the spell of his efforts to place a given block in the wrong recess. Where this is the case we have an emphasis on the fact that in the education of the child he must be held to any educational task by repeated encouragement and command, up to the point of fatigue or distraction due to misunderstanding of the command.

A small range of attention may be due to lack of development, to congenital deficiency, or to injury. The range may be so small that

comparison of forms, or of forms with recesses is impossible. This comparison marks the use of a more intelligent process in the performance of the formboard test. The child goes beyond the trial and error method, beyond simple recognition, to a simple reasoning process. But it follows immediately upon attentive observation of two or more objects with the question in mind as to which two are most alike. This, we note, depends upon range and distribution of attention and is the thing which so many young and deficient children lack; hence the dependence upon trial and error, or the giving up to failure. In every case where there is such comparison and consequent judgment there is good distribution of attention and analytic concentration of attention. Pillsbury² calls this 'judgment of evaluation or association.' This judgment of evaluation or association without actual perception marks a still higher process and hence signifies greater ability. If the child selects a block and says to himself, "Oh yes, I know where this goes, I remember seeing the right recess," he is making a judgment of evaluation on association. As judgment, then, is dependent upon the nature of attention, so inference, in its simplest form, may be said to be an association dependent upon the nature of attention. Inference is simple judgment, judgment is the selection of the essential element of a given situation with a comprehension of some of the possibilities. But such a consciousness of the situation and the selection are dependent upon sensation, and the consciousness of the sensation is dependent upon attention. In the performance of the formboard test there must be some consciousness of the situation and, of course, there is some selection, and these things depend upon the ability to give proper attention. This brings us to the point that while attention is most important in the performance of the test, attention itself is dependent upon a complex of the other abilities, the lack of any one of which would *not* bring about failure. Image-ability and associability determine the fixation of attention, attention then determines what course specific imagination shall take and hence aids in determining the understanding of the task. Specific imagination in turn depends upon memory, its trainability and retentiveness and the readiness of recall, in short upon the clarity of the mental image. It becomes apparent at once that "the conditions of attention are as widespread as the conditions of consciousness."³

It has already been said that the essence of attention is the increase of the clearness of one idea or group of ideas at the expense of others. If all forms in the formboard are equally clear, attention is too dispersed; if none are analyzed, or if only one is observed, there is no clearness of the mental image and hence no clear idea dominates consciousness. It is impossible to measure the participation of all of the mental processes in determining a state of attention,

but much depends upon association in perception. Clear perception is fundamental. Some apperceptual background is also fundamental, but this is dependent, in the first place, upon former clear perceptions and these upon certain motor adaptations and coördinations, which come about in response to some stimulus. The value of the formboard as a test of attention is that it gets down to the fundamentals of attention, for in practically every case the stimulus of the sharply defined blocks and recesses is so strong that there is adaptation of the sense organs and correlated movements of the organism and its parts. Only if there be defect in sense organs, or motor inability, extreme distractibility or stubbornness, in the otherwise normal child, will there be failure to respond. After the response, attention may be measured roughly by the accomplishment and the amount of stimulus necessary for distraction. If distraction comes early, there is little persistence of attention. Fluctuation of attention depends upon the duration of acts of attention, and this is largely due to the fatigue of the cortical cells.

Again, the response that the examiner gets from the subject depends upon two sets of conditions. These two include all of what has already been said. This classification aids in keeping clear the two sides of the question of attention. Attention depends upon objective and subjective conditions; upon the nature of the task and its physical background or setting, and upon the nature of the mind of the subject at the time of presentation. Under objective conditions we have the summation effect of successive stimuli, those brought by the test itself and by the environment. This covers the matter of repetition of instructions, urging, even starting the performance, and all possible distractions. Under subjective conditions we include the mental state of the subject when the task is presented to him, and this will be determined by the nature of the objective conditions and by his past experience. The kind of attention given will depend more upon the latter than upon the former. In the instructions of the examiner, "I am going to take all these blocks out and put them up here——," the subject has an opportunity to picture himself doing it. A child with experience with blocks will do better because he has had some ideas which were similar to the one aroused. The mood of the child at the moment of the test, his attitude toward his world, his health tone, and his immediately preceding experience are determining factors in the subjective condition. The whole attitude toward the present task will be a complex determined by his apperceptual background. To some children it is an opportunity to play a game, to some it means a command to do hard work which they will be compelled to do. The child with a lack of manual and digital experience will be sadly handicapped. We are inclined to say that the

performance depends upon the interest the child takes in the task, but we are only saying again what has already been said. Interest is only the objective way of looking at the conditions of attention. Things are interesting because we attend to them. The aroused sensation, memory image, or imagination gives pleasure and there is interest in the object.

This brings us to the point that attention goes back fundamentally to the element of consciousness, sensation. Clarity of perception is due to sense acuity and imageability, the initial ability to have images. The stimulus which gets attention must be relatively intense, the conditions of the subject must be such that the proper motor adaptations and coördinations are made, and the apperceptual background must contribute toward making the sensation pleasurable. This brings out the fact of the participation of mental processes other than sensation in perception. Perception is not the mere entrance of a group of sensations, but an arousal of old experience by a few newly entering sensations. The perception of the thing to be done is then the result of present sensation as interpreted in accord with past experience. Voluntary action is a problem of attention. This produces a syllogism: action is dependent upon sensation; attention controls the entrance and course of sensation and its consequent ideas; therefore attention controls action.

The child who cries, who is shy, nervous, stubborn, excited or frightened, cannot give proper attention, for attention is very poor when feeling and emotion are strong. Most attention involves strain, and emotion involves attention to that which distracts from the task in hand. Emotion or feeling is attention to sensation. Emotion is not a matter of inattention but of strained attention, hence the futility of attempting to secure the solution of a problem, the making of a comparison, or the passing of judgment, during the stress of emotion.

The above as related to the results of this investigation brings us to the conclusion that "attention has an anatomical basis and that as a starting point for a nervous explanation of attention we must accept the hypothesis of psycho-physical parallelism." With this in mind it appears that the conditions of a state of attention at any given moment depend most largely upon apperceptual urge.

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3. *Ibid.* Pp. 234.

For further reference to reports on investigations with the formboard, see H. H. YOUNG, The Witmer Formboard, *THE PSYCHOL. CLINIC*, 1916, 10, Pp. 110-111.

A BRIEF BINET-SIMON SCALE.

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(Concluded.)

III

Although the brief scale was developed as an experimental method, it has seemed advisable to consider its actual practicability. As a critique of its practical value I have applied the first brief scale (table III) to 154 public school children in the first four primary grades of a large school in Millville, N. J. I am indebted to Mr. Ira J. Steiner, principal of the school, and to his teachers for the opportunity of making these tests. The tests were made by Mr. Steiner and myself with the assistance of three members of the Research Staff of the Vineland Laboratory. The purpose was two-fold, first to determine the value of the tests under practical working conditions, and second to test the validity of the method in the hands of an untrained examiner. Mr. Steiner had had some previous acquaintance with educational measurements, and also was familiar with the general nature of the B-S Scale, and had observed a number of examinations in which it was employed. I personally instructed Mr. Steiner in the procedures and scores employed in giving the brief scale tests. The instruction period consumed no more than fifteen minutes and was supplemented by only one brief conference on checking his results. With this minimum of instruction, unassisted by previous experience in giving the tests, Mr. Steiner was able to secure results which, upon close analysis, proved to be unquestionably as accurate as those obtained by myself and the research assistants. From this it would appear that a school-man of intelligence and some training in educational measurements, may acquire in less than a half hour's instruction the technique required for applying the brief scale satisfactorily, if this has been preceded (or presumably supplemented) by some observation of actual examinations.

The children were examined under very satisfactory conditions in cloak-rooms and ends of corridors. All children present in the first four primary grades were tested. The children were for the most part from the homes of mill-workers of inferior social status. No exact data on social status and nationality were obtained; school

grade was the only satisfactory criterion of the ability of the subjects. The examination times for the individual tests varied from five to ten minutes per subject.

The final data were analyzed by mental age distributions, I. Q. distribution, school grade, and life age, in various combinations. The data for each examiner were also analyzed for influences of personal equation, but no serious errors were found. The total I. Q. distribution proved to be as nearly symmetrical as could be expected from so small a number of subjects, but the mode was located at I. Q. 85 instead of I. Q. 100. The I. Q. distributions by school grades were skewed toward average intelligence in the first two grades, but toward inferior intelligence in the third and fourth grades. This is not surprising, for in a school selection of children coming from homes of inferior social status, which status is known to be associated with inferior intelligence status, the children as a group would be, on the average, of inferior ability. It might also have been expected that the selective influence of the course of study would cull out the more seriously retarded in the third and fourth grades, whereas these retardates would not yet be so differentiated in the first two grades.

The position of the I. Q. mode at 85 instead of at 100 might be interpreted as indicating either that the scaled arrangement of the tests was too difficult, or that the subjects actually represented inferior levels of ability. All available evidence points toward the latter assumption, for in addition to the inferior social and pedagogical selection the school teachers and principal, from their experience with the children, felt that they were decidedly inferior to the average "run" of school children. This conclusion is amply supported by an analysis of the age-grade distribution of the children. Conversely, the validity of the arrangement of the tests is supported by the fact that individual children were able to demonstrate very superior intelligence, for of the 154 children one was of I. Q. 125, two of I. Q. 130, and two of I. Q. 135. All five of these children were under 7.5 years in life age, and all were advanced in school grade, though not so much as their intelligence levels warranted.

The simplest and most convincing demonstration of the validity of the brief scale with these children is made by comparing intelligence status with scholastic status, on the assumption that school grade is a fair measure of a child's intelligence. This comparison by school grade is rather complicated in the absence of some index which permits the grouping of all the children in one classification. To overcome this difficulty I have used a *pedagogical quotient*, or P. Q., the ratio of the standard age for a grade to the actual age of a child

in that grade. By means of this ratio one is able to eliminate one term in the statistical analysis, and is able to summate and graph a total distribution. In using the pedagogical quotient I have taken 6.5 years as the standard age for the first grade, 7.5 for the second, and so on. Thus, a child ten years old in the second grade would have a P. Q. of $\frac{7.5}{10.0} = .75$. This P. Q. can be compared directly with the child's I. Q., his intelligence quotient, the ratio of mental age to life age, as a measure of adequate school progress. Unless the ratio of a child's P. Q. to his I. Q. is approximately unity, it is very likely that something is wrong with the school progress of that child, perhaps his attitude, perhaps poor teaching, perhaps the course of study, or what not. When P. Q. and I. Q. are not closely similar, at least some account should be taken of outside factors. Numerous objections may be raised against taking the pedagogical ratio here proposed as a measure of scholastic accomplishment and ability; illnesses, late entrance, language difficulties, many factors retard a child in school. But it was necessary to obtain some one reliable measure of school standing in order to avoid the difficulties of

TABLE VIII.—TOTAL FREQUENCY DISTRIBUTION OF THE P. Q.—I. Q. RELATIONSHIP FOR 154 SCHOOL CHILDREN. MEDIAN I. Q. = 84, MEDIAN P. Q. = 92.
P. Q.—I. Q. CORRELATION = .82

I. Q.	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	Total
P. Q.																			
50																			
55				1															1
60			1	1															2
65	1		1																2
70				3	1	1													5
75				1	4	2													7
80					3	1				1									5
85				4	11	5	6	3											29
90				3	1	3	2	5					1						15
95					2	4	11	3	5	1									26
100						2	5	3	3	3	1	2							19
105							1		2	6	3	3	1						16
110							2		2		1	3	2						10
115								1	2		2			1		1	2	1	10
120											1	1	3		1				6
125																		1	1
Total	1	0	2	6	17	16	17	25	20	15	11	8	8	2	1	1	2	2	154

unwieldy tabulations of data. This purpose the P. Q. serves, and it is beyond the present argument to enter into a discussion of its merits and disadvantages. The ratio of years in school to grade achieved is not so good for this purpose as the ratio suggested.

Table VIII shows the total I. Q. — P. Q. distribution of the 154 Millville school children. The Pearson $r = .82$, which is sufficiently high to demonstrate the practical validity of the brief scale ratings. It is probable that the I. Q. term is more reliable than the P. Q. term as a measure of intelligence, and that if the P. Q. were a more reliable estimate of intelligence the correlation would have been materially increased. It is obvious from the table that superiority of I. Q. is not accompanied by commensurate superiority of P. Q., which indicates, as Terman has well expressed it, that the (intellectually) bright children are (relatively) retarded scholastically. The P. Q. mode, however, is at 90, whereas the I. Q. mode is at 85, so it appears that the average and dull children are scholastically advanced in relation to their intelligence.

From the foregoing it is not too much to hope that this study has indicated a profitable field of research and has developed a reliable ready-to-hand measuring scale for rapid mental testing. Without doubt, it is possible for psychology, by following the implications of these results, to make mental tests available for everyday uses and needs, by eliminating the prohibitive costs of time and expertness now required for reliable mental testing. If we can make these laboratory methods over into tools of everyday life we shall indeed realize the aim of making psychology indispensable to all branches of social science.

APPENDIX.

TABLE IX.—FREQUENCY DISTRIBUTION, SHOWING CORRELATION BETWEEN MENTAL AGES BY THE COMPLETE (GODDARD) BINET-SIMON SCALE AND BY THE FIRST BRIEF SCALE, FOR NORMAL SUBJECTS.

Brief scale ages	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	Total
Complete scale ages													
5.0	1												1
5.2	1												1
5.4		2											2
5.6		3	1										4
5.8				1									1
6.0					2								2
6.2				1									1
6.4			1	4	1								6
6.6				2	2								4
6.8						1							1
7.0					3	2	1						6
7.2					4	4							8
7.4							2						2
7.6					1	3	1						5
7.8							2						2
8.0						1	6	1	1				9
8.2								1					1
8.4									3				3
8.6									1				1
8.8									2	1			3
9.0									1				1
9.2													0
9.4										4	2		6
9.6										1	3		4
9.8													0
10.0										1	3	1	5
10.2											1		1
10.4												2	2
10.6											1	1	2
10.8											1	3	4
Total.....	2	5	2	8	13	11	12	2	8	7	11	7	88

TABLE X.—FREQUENCY DISTRIBUTION, SHOWING CORRELATION BETWEEN MENTAL AGES BY THE COMPLETE (GODDARD) BINET-SIMON SCALE AND BY THE SECOND BRIEF SCALE, FOR NORMAL SUBJECTS.

Brief scale ages	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	Total
Complete scale ages												
5.0		1										1
5.2		1										1
5.4	1	1										2
5.6	2		2									4
5.8	1											1
6.0	2											2
6.2			1									1
6.4		1	4	1								6
6.6				4								4
6.8			1									1
7.0			1	2	3							6
7.2			1	1	3	3						8
7.4					2							2
7.6					1	1	2	1				5
7.8						2						2
8.0					1		7	1				9
8.2							1					1
8.4							2	1				3
8.6									1			1
8.8								3				3
9.0									1			1
9.2												0
9.4									1	4	1	6
9.6										2	2	4
9.8												0
10.0										4	1	5
10.2										1		1
10.4										2		2
10.6									1		1	2
10.8										1	3	4
Total.....	6	4	10	8	10	6	12	6	4	14	8	88

TABLE XI.—FREQUENCY DISTRIBUTION, SHOWING CORRELATION BETWEEN MENTAL AGES BY THE COMPLETE (GODDARD) BINET-SIMON SCALE AND BY THE FIRST BRIEF SCALE, FOR FEEBLEMINDED SUBJECTS.

Brief scale ages	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	Total
Complete scale ages														
5.0	3		3	1										7
5.2	1	5	4											10
5.4		1	3											4
5.6		3	1											4
5.8		1	4	1										6
6.0		4	1	3	2	1								11
6.2			4	2										6
6.4			2	3	2		1							8
6.6			1		2		1							4
6.8		1			1	4								6
7.0				2	1		1							4
7.2					3	6	3							13
7.4					1	3	5	1						10
7.6					1	1	5	1						8
7.8						1	2	2						5
8.0						3	2							5
8.2						1	6	2	2	1				13
8.4								2	4	3	1			10
8.6								2	3	3				8
8.8								1	1	1				3
9.0								1	3	1	1			6
9.2								1		5	1	1		8
9.4										1		1		2
9.6									1		1			2
9.8											2	1		3
10.0										1	1	2	1	5
10.2										1	1	5		7
10.4											1	1		2
10.6											3	6	1	10
10.8													1	1
Total.....	4	15	23	12	13	20	26	13	14	17	12	17	3	189

TABLE XII.—FREQUENCY DISTRIBUTION, SHOWING CORRELATION BETWEEN MENTAL AGES BY THE COMPLETE (GODDARD) BINET-SIMON SCALE AND BY THE SECOND BRIEF SCALE, FOR FEEBLEMINDED SUBJECTS.

Brief scale ages	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	Total
Complete scale ages													
5.0	1	3	1	1		1							7
5.2		2	4	4									10
5.4			1	2	1								4
5.6				4									4
5.8				4	1		1						6
6.0			2	4	1	2	2						11
6.2				1	3	2							6
6.4					4	4							8
6.6				1	1	1		1					4
6.8					3	1	1	1					6
7.0					1		1	2					4
7.2						3	9						12
7.4							7	2	1				10
7.6							3	2	3				8
7.8							1	2	2				5
8.0									1	3	1		5
8.2						1	1	4	4	1	1		12
8.4								3	4	3			10
8.6								2	3	1	2		8
8.8									1	1	1		3
9.0									1	2	2	1	6
9.2										6	2		8
9.4										1	1		2
9.6										1		1	2
9.8										2	1		3
10.0											4	1	5
10.2									1		3	3	7
10.4												2	2
10.6											2	8	10
10.8											1		1
Total.....	1	5	8	21	15	15	26	19	21	21	21	16	199

CLINIC REPORTS.

XXIV.

Leah, five years old, is an interesting combination of Cretin and Mongolian. She was brought to the Clinic because she is still unable to talk. The child's history reveals general physical retardation. She cut her first tooth at thirty months, and walked at thirty-six months. At two, "Something was wrong with her spine," her mother said, and "she got tired sitting."

Leah is now only slightly below normal size. When she came into the Clinic, her health, motor control, and coördination seemed good. She has the flat nose, round head, red cheeks, slanting eyes and fissured tongue of the Mongolian. Her hands are well-shaped, and her skin is soft and moist, although her muscles are rather flabby. Cretin characteristics are her ready smile and protruding tongue.

The mixed type, also, is evident in her behavior. Her sister says "She gets tired playing, but when she is tired, she keeps on going with something else. She likes to keep busy." During the examination, however, her behavior was more that of the Cretin. She showed great fatigability—often stopping, resting her cheek on her hand, and looking around the room with a vacant smile. She ran to her sister several times, but always returned obediently to the examiner.

The formboard test indicated insufficient attention, both distributive and analytic. At the end of five minutes one block was correctly placed, apparently by accident, while the others were laid over the wrong recesses. Apparently she made no attempt to compare the shapes of the blocks and recesses. The second trial, after instruction, was also a failure. Most of the blocks were placed over the wrong recesses, when Leah began to remove them.

Dr. Witmer then gave her the three-block board. Her distributive attention was just adequate for satisfactory performance. Her persistent attention was better. She worked very slowly, showing no improvement in method after several trials.

Leah seemed to enjoy the colored cubes. She understood the order "Give me a block," but could not recognize color names, and because of her low degree of sensitivity, she could not match colors.

The intelligence level of this child is well below four years. Her failure to learn the formboard, and the lack of imageability shown by her failure to match shapes, indicate that, in spite of her docility, her attention is so poor that she is non-educable.

Nothing in the family history points toward a hereditary cause. Leah is the youngest of ten children, all the others reported normal. The parents are foreign-born. The child's history of retardation shows that her defect is congenital.

The diagnosis is low grade imbecile, of mixed Mongoloid-Cretin type. This child will probably never be able to talk in sentences, or to care for herself. The treatment recommended is institutional care. Although Leah is so low-grade, her rather attractive appearance and manner may secure her admission to a training school.

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Scholar in Psychology.

REVIEWS AND CRITICISM.

Education of Defectives in the Public Schools. By Meta L. Anderson. Yonkers, N. Y.: World Book Company, 1917. Pp. xvii+104.

Miss Anderson has set forth, in a thoroughly practical way, the methods used by teachers of defectives in the more progressive American cities. A serious weakness in her book, is that she ignores nearly everything that has been accomplished outside of Newark, N. J., Vineland, N. J., and Berlin. Dr. Goddard, in his preface, seems to be laboring under a similar psychic blindness, when he says, "Others may have caught some glimpses of the truth, and may have for one reason or another worked into their practice certain elements which are also used by Miss Anderson. Perhaps still others have seen the whole plan clearly but have not had the opportunity of working it out. At least it has remained for Miss Anderson to work out a complete program free from all tradition of the methods with normal children, and based only on the needs of the children in her care, the procedure being constantly modified and corrected by the results." In this connection it is only necessary to think of New York, Boston, Minneapolis, and Detroit, among the cities whose treatment of defective children has given proof to the contrary.

Miss Anderson is an advocate of Binet testing. She goes so far as to say, "The ideal way to select children for the defective or backward classes would be to have every child in a given school or school system examined by intelligence tests and graded accordingly. Those retarded three years or more would be placed in classes for defectives, those retarded two years or more in backward classes, and doubtful cases in observation classes." Nevertheless, she generously admits, "While we speak of a defective child having a given mentality, it by no means follows that the defective can compete in all things with a normal child of the same mentality. The advantage is always with the normal child." And again she says, "Theoretically, at least, the child of fourteen with the mentality equal to a nine-year-old child should be able to do the work of a fourth-year grade. Practically, that is not generally true of the children selected for a defective class. The defectives, if there are any, who can do the work of their mental age are probably retained in the regular grades, passing as dull children and not being recognized as true defectives until they are ready to leave school."

A strong point is made by Miss Anderson when she repeatedly advises the teacher to "begin where the child is." But her preferred way of finding out "where the child is" would seem to be through the Binet tests. Psychology has no place in her scheme. It is passed over in silence, left flourishing in some outer world along with the successful teachers in other towns than Newark, N. J. Of diagnostic teaching,—teaching directed to getting a child to take the next step, based upon a psychological analysis of his present capacities, Miss Anderson seems unaware. Her work is practical, not scientific. It is of today, not of tomorrow. For that reason it may be expected to have a brief, though intense, period of usefulness. It will hardly, as Dr. Goddard claims, become "the guide for teachers of defectives for many years to come."

Fifty Years of American Education. By Ernest Carroll Moore. Boston: Ginn and Co., 1917. Pp. 96.

"In the year 1867," say the publishers in their preface, "Edward Ginn took desk room in a modest Boston office and so began the business which has for many years been conducted under the firm name of Ginn and Company.

When an individual or an organization reaches the half-century mark it seems fitting to signalize in some appropriate way that achievement. Casting about for a suitable anniversary memento of our own fifty years, we were struck by the remarkable growth and development of the school system of the United States during this period. It finally seemed to us that we could do no better than invite Dr. Ernest C. Moore to sum up the educational progress of the United States since 1867. We are sure that Dr. Moore's admirable sketch of the history of education in this country for the period beginning in 1867 and ending in 1917 will be a welcome and useful contribution to our educational literature."

Dr. Moore divides his book into three chapters: I. "We live in a period of change;" II. "Education at the end of the Civil War;" and III. "Some changes since the Civil War." For the student of educational history, Dr. Moore adds a brief bibliography.

His study "shows that though in 1867 a beginning had been made in most of the activities of education, nothing more than a beginning had been made. The development, therefore, of all the great present-day agencies of education—free graded elementary schools, intermediate schools, high schools, normal schools, the great universities, schools for the negro and the Indian, vocational schools, the great foundations, departments in universities for the study of education, statistical information concerning schools, new courses of study, a vast literature about teaching, well-nigh the whole present-day science of education (including school administration, child-study, educational psychology, the history and theory of education, school hygiene, and educational standards and measurements), and very nearly the entire machinery of school supervision (city superintendents, supervising principals, supervisors of subjects, and state inspectors and agents)—is a growth of the last fifty years. This statement refers to changes so colossal that the mere effort to think of them one after the other is stupefying, but we have not begun to enumerate them all. Our list makes no mention of school buildings, play and playgrounds, compulsory education, truant schools, juvenile courts, public libraries, and a score or more of agencies which have been developed to assist the school in its work. This whole accumulation of progress has come about so gradually that it is only when we set ourselves consciously to unravel its history that we become aware how truly marvelous it is."

A. T.

NEWS AND COMMENT.

Fifteenth General Convention of the Religious Education Association.

"Community Organization" will be the theme of the Fifteenth Annual Convention of The Religious Education Association to be held at Atlantic City on March 12-14, 1918. The convention program responds to current interests, in the attention paid to the problems of world relationships and organization. The fundamental relations of religion and of education to the "neighboring" of nations; the education of the young for a religious type of patriotism, and the immediate work to be done in war times, these are the leading topics of the evening sessions. The day sessions are devoted to the problems of organizing community life on a basis of religious education. Some important studies have been undertaken which will furnish a basis for the discussion in these sessions. All the meetings of the convention are open to any persons interested. The meetings will be held and headquarters maintained at The Breakers, Atlantic City.

The Psychological Clinic

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VOL. XI. No. 9

FEBRUARY 15, 1918

THE SENILE MIND.

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It was my privilege recently to have charge of an old gentleman on a long and tiresome journey in a Pullman car. He is eighty-five years of age, and appears to be in excellent physical condition, though his mental powers are considerably disintegrated. As a youth he was a great athlete, being the champion wrestler and jumper in a whole township in central Indiana. He has lived an active, vigorous life in a rural community in the Middle West, and was at one time a fairly successful farmer. He was also a fine workman with carpenter's tools, and for many years built elevators in the western states. At the carpenter's trade he was regarded as an expert joiner, and was in great demand for laying hardwood floors, such as were frequently used twenty-five or thirty years ago.

He is the father of six children, was a soldier in the Civil War, and was a pioneer in the state of Nebraska in the early seventies. His ancestors were Quakers who migrated from the State of Pennsylvania in the early thirties and settled in central Indiana. His boyhood days were spent in the rugged activities of clearing the forests, draining the swamps, and many other arduous tasks which fell to the pioneers of Indiana. His schooling was meagre, but through the favorable recommendation of a county superintendent who had been his teacher, he taught school for two or three years.

In recent years he has not been actively employed, but has lived at his own home with very little responsibility. Two years ago his wife died, and since then he has spent his time chiefly with two daughters, one living in Ohio and the other in Nebraska. He has not been able to transact business for several years, and two years ago a guardian was appointed to look after his financial affairs. This action was taken because his children recognized his mental incapacity.

Having known for several days that I should be his escort on this

long journey, I naturally thought of various schemes by which I could entertain him *en route*. It struck me that since his mind has disintegrated so considerably, and is now about the equivalent of a six or seven year old child, he might respond to some very childish entertainment and treatment. Incidentally I desired to measure his mental age at the present time by some such scale as the Binet, if it could be done without arousing any suspicion on his part that he was being tested for mentality. By careful planning and some ingenuity, it was possible to measure his mental age approximately and, at the same time, afford him no little entertainment.

The first approach toward measuring his mental ability was through spelling. This was easily accomplished, because in his boyhood days he was regarded as a phenomenal speller, having committed to memory every word in several of the spellers of his day. It was easy, therefore, to enlist his attention in spelling. I had provided myself with a copy of Ayres' Spelling Scale, and he very arduously entered into the "match," though he was the only competitor. I encouraged him in his efforts and somewhat over two hundred words were pronounced to him. On the basis of his correct spellings he should be ranked somewhere in the latter part of the third school year, according to the Ayres' scale. This would make his mental age in spelling approximately eight and one-half years.

From spelling it was easy to proceed to vocabulary. I was provided with the vocabulary scale used by Terman in his Stanford Revision of the Binet Scale. My subject had great difficulty in defining twenty words from the list, and the result of this test entitles him to a mental age of eight years.

In the tests for the fifth year of the Binet Scale my subject named the colors correctly, was successful in aesthetic comparisons, gave the correct definitions of terms, but failed on the "game of patience," and could not give his correct age. In the sixth year he passed all the tests with the exception of "forenoon and afternoon." In the seventh year he failed in his description of the pictures, in repeating five digits, in tying a bow-knot and in naming the days of the week. He could name the days from memory, but when asked what day comes before Thursday, Tuesday, etc., he could not decide. He could not tell the day of the week, the month, or the year.

Beyond the sixth year there was little integrity to his answers and he could not be given a full score for a single question.

There are several mental characteristics in his senile mind which may be of interest. In the first place, it seemed impossible

for him to comprehend the mechanical character of the Pullman train. He regarded the series of sleepers and the diner as one large building, somehow connected. The movement of the train, both forward and sidewise, he regarded with some fear, as if the very foundations were being shaken under us. In some instances he attributed the swayings of the train to his own lack of motor ability, and complained of being "old and no good." It is needless to say that I took great pains to explain to him that we were being drawn along a railroad by an engine, but it all seemed incomprehensible. To me it seemed that he had about the comprehension of a three year old child for the whole procedure. In making the trip forward and backward to the diner, his poor vision only permitted him to get rather rough kinesthetic impressions, and these were not associated with any past experiences. Consequently, there were aroused in his consciousness vague ideas of the meaning of the series of cars, the diner, and the journey forward and backward three times a day. It should be said that he has not been a traveler on Pullman trains, and only a few times in his life has he taken his meals in a dining car or slept in a berth in a sleeper. This accounts for the fact that the new experience was practically isolated from all others and he found much difficulty in making the mental adjustments.

Another observation indicated quite clearly that his mental activity is like that of a very small child. Upon one occasion I found him scrutinizing the head of a nail in the Pullman seat. He investigated it from every angle, and seemed to get a great deal of pleasure from the visual perception of this bright object, and from twisting it with his finger nail. It occupied his attention for a distance of twenty or thirty miles.

At another time I found him busy studying and tracing the blue figures in the upholstering on the Pullman seats. He was apparently trying to analyze them and when asked what he was doing replied: "The picture looks like a field with a river running through it."

His learning ability was practically *nil*. I tried to impress upon him the location of the men's washroom, and the forward journey to the diner, but each time the route was new to him and I had to direct his course. In the washroom he made no progress in learning the use of faucets and drains, though I led him to the washroom frequently and instructed him carefully each time. So far as I could determine, each experience for him was an absolutely new one.

He was bothered very much by the reflections in the mirrors and the windows. In the evening when the lights were first turned on

he could see the reflection of the interior of the car outside of the window, which gave the appearance of gliding along on top of the snow. This interested him exceedingly and he commented several times on the fact that there was a room closely adjoining the one we were in. My explanations of the physical phenomenon only seemed to mystify him, and I finally gave up the task and left him to enjoy the floating shadows in very much the same fashion as a little child.

His dreams appear to be so vivid that he cannot discriminate between them and the waking experiences. His sleep on the Pullman was doubtless somewhat disturbed and his dreams were very vivid. He awoke at one time and said to me that he had gotten up and dressed and gone out to look around the town. While down town he met a man who told him that he had best go back and get into bed, and he took his advice about it. At another time he awoke in the middle of the night and stated that he thought he was in a place where he ought not to be and wanted to leave the train. I went into great detail in explaining to him that we were sleeping on the train and that he would soon be at his old home, and then we would get off the train, where he would be met by his daughter. This satisfied him and he fell asleep like a child.

This old gentleman's mental ability in certain lines is quite characteristic of the senile mind. The old associations are the most vivid, and those habits which have been used continuously are still fairly efficient. From the standpoint of mental tests it is here that he excels somewhat the child who would measure about the same psychological age as he. For example, he has always been very particular to carry a good watch and have the correct time. However, on this journey he failed to wind his watch and it stopped at 3:45 A. M. It was 10:30 in the morning before he noticed that his watch had stopped and when given the time he set his watch correctly to the minute. I watched him very closely, thinking that possibly the mental ability to do it would be lacking; but he did not hesitate, and proceeded to move the hands in the most economical manner to the correct position. He succeeded, undoubtedly, in this test because he has had constant practice in the use of the timepiece, though when asked offhand to state whether it was forenoon or afternoon he could not tell, and never thought of consulting his watch for the necessary information.

As was previously stated, he was an expert joiner in middle life, and had had much use for the plane. Recently, while in my home, in order to test his memory, I handed him a plane from which the blade had been removed, and asked him to put it together. In this he failed completely. He was astounded at his own inability and

expressed himself thus: "I never thought I would forget how to put a plane together." It is entirely probable that he had in no way used a plane for fifteen or twenty years, and in this time those habits formerly well established were completely obliterated. This, however, is quite characteristic of the senile mind and points distinctly to an educational possibility of retaining many powers ordinarily lost in old age. If old people can be encouraged to maintain to the end their habitual activities, there seems little doubt that mental and physical disintegration would be materially lessened. This, of course, does not mean that old people should be held to labor arduously throughout the senile period, but they should remain interested in many of the things to which they have given attention during a long lifetime.

The treatment of the senile mind is a problem not well understood by those who have old people in charge. There are a few general principles which would be of value to the administrators of homes for the aged, and might be of value to children who may be given the responsibility of caring for aged parents.

In the first place, it should be remembered that the senile mind is a weakened mind in all its phases of activity. It is impossible for such an individual to have the proper comprehension of much conversation he hears. Modern topics, up-to-date methods of doing things, knowledge of the younger generation and their activities, are subjects in which the senile mind finds no interest, because it has no contact with them. For this reason conversation along such lines may prove extremely irritating to the aged, and may be the cause of much trouble in the home. The same psychic attitude is shown when a little child manifests vexation because it cannot comprehend certain phenomena. Obviously the only sane treatment of the senile mind in matters of conversation is to confine the topics to the period of his youth when his mental powers were normal. This is a difficult task, but it is the only way in which the senile mind can be interestedly engaged. In soldiers' homes, and other institutions for the aged, this problem is practically solved by the fact that the inmates can always find those of equal mental age with whom to associate, and there is the same mutual pleasure in these associations that are to be found among youth of the same age.

Those who have charge of the aged should study the individuals carefully in order to discover habitual activities which have been retained and in which interest is still alive. Effort should be made to stimulate these activities to the end. To allow one of them to lapse is to reduce the mental capacity so much, and to render the subject so much more like a child without the experience that train-

ing brings. Nothing is more pathetic than old age when the individual is incapacitated for service of any sort, and when he has forgotten all the technique of former days. Every effort should be put forth by children, who have the care of aged parents, to keep them interested in some sort of service, active in some pursuits in which they formerly excelled.

There is a wide difference between the senile mind and the child mind. The former has lost its plasticity, its curiosity, its inquisitiveness, its investigative activity. It lives in a remote past of experience, and has a backward look. Youth looks forward with great hope for large achievement as a result of investigation and conquest. Youth has confidence, feels assured of victory, and is ready to race with competitors. Old age shrinks from contest, lacks initiative, and is generally satisfied with its past.

With the distinctions from youth, and the similarities to it, the senile mind should be studied with care, and the life activities of the aged adapted to their mental and physical possibilities.

A RETARDED PUPIL RESTORED TO GRADE.¹

BY HERMAN CAMPBELL STEVENS, M.D., AND
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Chicago, Illinois.

A report of this case is deemed important for the reason that it demonstrates the necessity for a correct diagnosis of retarded school children, in order that teachers may know how to proceed with their training. The essential features in the story are a paralyzed arm, which was wrongly supposed to indicate a brain lesion; failure to learn to read or write by ordinary school methods; discouragement and lack of interest, resulting from the fact that the boy's first teachers had not understood his condition; and his subsequent rapid progress and eventual restoration to his proper grade as a result of correct diagnosis and intelligent teaching.

Thomas entered the first grade at the Wadsworth School, in September, 1914, at the age of 6 years, 2 months. He made no progress during the first school year, which led to an examination by the Child Study Department, September 24, 1915. The report rendered upon examination, was that Thomas showed up fairly well with tests of mental ability suitable to his age, except for the fact that he had gained nothing at all in ability to read. It was stated, also, that just how much of a brain lesion accompanied the paralysis of his right arm could only be determined through observation. It was suggested that he be given a further trial in the regular grade, as his attendance had been irregular. After six months more in the regular first grade, Thomas was examined again by the Child Study Department, January 21, 1916, and the following report was submitted: Thomas has been in the first grade one year and six months and has not learned to read and write. Since, in a six months' trial in the regular grade he has made no appreciable progress, it is recommended that he be given a place in a subnormal room.

Thomas entered the subnormal room, March 6, 1916. Upon careful examination and close observation, his teacher, Mrs. Russell, found that he knew nothing at all about school work. The faculties of learning seemed to be dormant, undeveloped, and imperfect. He showed no interest in anything. If given a dissected puzzle to put together, he made no effort to do it. It was supposed that as he probably would never learn to do any school work, and was incapacitated for handwork by the paralysis of his right arm, the only

¹ From the Psychological Laboratory of the University of Chicago.

thing to do for Thomas, was to make him happy. After one week of observation, however, Mrs. Russell obtained from the boy's parents a history of his development and secured their consent to a physical examination by Dr. Stevens. The history and the results of the examination are here given in detail.

Thomas was a full term baby; weighed thirteen pounds; instruments were used; a very difficult birth; it was necessary to work with him for several minutes, as he was black and blue. There was a deep groove in the center of the head and each side was puffed out as though full of water. The back of the head was flat. Behind the right ear and extending down the throat was a very noticeable and hard enlargement: the mother states that it seemed like a bone. The right arm was paralyzed and the child could move only one finger of the right hand. He was given electric treatments for ten months; swelling behind the ear disappeared; the head was still rather large but not puffed out; he gained movement of fingers of right hand. Fontanelle was a long time in closing. An attempt was made to get an X-ray plate of head, but the child would not hold still. He was a cross, irritable baby and cried most of the time; needed almost constant care for two years. Cut first tooth at six months; walked at seventeen months; talked at two years. Was breast fed for four months; then given several kinds of food, the only one that finally agreed being a brand of condensed milk.

Diseases of infancy. There were no convulsions. At the age of three, he had scarlet fever with suppurating ears, followed directly by chicken pox, measles, and dropsy; was in the hospital for ten weeks. From the age of four until one year ago, Thomas had frequent sick spells. He would get up and dress, go to the table, put his head down and say that he was sick; a vomiting spell would follow and then he would want to sleep all day; he would seem stupid and want to be let alone. At times he would go to school in the morning and have these spells at noon. He has not had them during the last year, but occasionally complains of a pain in his back.

Age, 8½ years.

Mental age, by Yerkes-Bridges point scale, 8 plus.

Norms

Height, Sitting, 66 cm.
Standing, 126.7 cm.

Height, Sitting, 67.72
Standing, 123.48

Strength of Grip, Right, 0.5
Left, 13.5

Grip, Right, 12.41
Left, 11.16

Vital Capacity, 1350.

Vital Capacity, 1316.

Circumference of Head, 19.75 cm. *Circumference of Head*, 20.51 cm.

Cephalic Index,

Breadth, 140

Length, 170: 82.34

Cephalic Index,

Breadth, 143

Length, 180: 78.71

Auditory Acuity, Right ear, 8 inches.

Left ear, 8 inches.

Visual Acuity, Right eye, 10/100 *E Chart*, Right eye, 10/20

Left eye, 10/30

Left eye, 10/20

The Wassermann reaction on the blood serum was negative.

Head.—There is an asymmetry of the skull; the right occipital region is flatter than the left. The vertex is broad and high. The right side of the face is fuller than the left. The conchæ are large and symmetrical. The pupils are round, equal in size and react to light and accommodation; there is unsteadiness in fixation but no nystagmus. In the right temporal region there is a small scar. There is partial obstruction of both nostrils. There is a slight deviation of the tongue to the left. The frenulum is slightly short. The tonsils are large on both sides. The palate is symmetrical but shallow in front. The anterior cervical glands are slightly enlarged.

Chest.—The area of superficial cardiac dulness extends 6 cm. from the mid-sternal line. There is no thrill. The heart tones are negative. The axillary glands on the left side are slightly enlarged. There is bronchial breathing in both apices, but otherwise the lungs are negative.

Spleen.—The spleen is not enlarged or palpable.

Liver.—The liver dulness extends from the fifth rib to the costal margin.

Abdomen.—There is some tenderness in the epigastrium. There is no tenderness over McBurney's point. The patient states that there is pain in the mid-thoracic region of the spine.

Genitalia.—There is partial phimosis. The testes are in the scrotum. The scrotum is somewhat lax.

Reflexes.—The biceps and triceps are absent in the right arm. They are present in the left. The umbilical reflex is present in all four quadrants; it is normal except that the right lower quadrant is less active than the left. The cremasteric is lively. The patellars are lively. The plantar is normal in direction. The Chaddock, Oppenheim, and Gordon signs are negative.

Co-ordination.—The Romberg sign is positive.

Arms.—The right shoulder hangs forward. The infraspinatus

group of muscles on the right side is atrophied. The deltoid is atrophied. The strength of the biceps is fairly good. There is a wrist drop on the right side. The extensors of the wrist are weak. The flexors of the fingers are fairly strong. He is unable to raise the right arm more than 45°.

Legs.—The left leg measures 63.5 cm. in length. The right measures 63 cm. There is a hairy mole on the left leg on the lateral surface just above the knee. Abduction, rotation, extension, and flexion of both legs from the hip joint cause no pain.

Posture.—The lumbar spines are somewhat conspicuous. There is scoliosis to the left in the lumbar region, and to the right in the upper thoracic, there is a marked depression of the sternum in the region of the fifth, sixth and seventh ribs. There is a Harrison's groove.

The essential feature in this examination from the point of view of the child's school work, is the fact that it showed the paralysis of the arm to be a lower motor neurone lesion, and not a brain affair at all. Traction upon the arm at birth may have torn the roots of the motor nerves of the arm. The atrophy of the muscles, and the absence of certain of the arm reflexes point to a nerve lesion. This, together with the fact that the child was practically at age according to the mental tests, and also judged from his behavior, seemed to indicate that he could be trained if proper methods were employed. His subsequent history bears out this prognosis.

The general idea, underlying the method used in teaching Thomas, is as follows: A child's life is largely made up of action, and his birthright is free motor activity. Therefore, if we aim to awaken his mental powers, we must begin with play, which stimulates spontaneously and yet harmoniously. In this way games furnish a better field for the development of child nature than any other exercise which can be employed in a school course. That which spontaneously holds the child's attention is the line of least resistance, and by means of his play interests, correlated with the school work, the power to think quickly, to judge accurately, and to act, as well as the qualities of politeness and self restraint, can be unconsciously acquired. Thomas' work was planned along this line. In his reading, which was the first problem, as it is the center about which the entire primary work revolves, the first words and sentences were ones for him to act. For the first sight words, *run, march, walk, fly, jump*, etc., were given. Through play he soon learned to know a long list of action words, and the reading matter selected as he was ready for it, was also full of the action of real life. Along with this sight word play, he began on the very first day to learn,

also through play, the sounds of the letters. With these mastered he had the key to the English language, for simultaneously with learning of the sounds his ear was trained to blend the sounds and form words. When he had had sufficient practice to recognize a word from sounding it, he was started on word building, beginning first with the simplest phonograms, as *at*, *an*, *un*, etc. These phonogram drills are excellent, and should be kept up with any child during the whole first three grades.

Thomas responded in a remarkable degree to the play and activities. He soon felt that he was living in a child's world, suited to his needs. He applied himself attentively to his work. He quickly learned the sounds of the letters and was able to pronounce any phonetic word. It was keenly interesting to watch the unfolding of his little mind. From March until June, 1916, Thomas read four primers, and during the long summer vacation lost little of what he had learned. He returned in September intensely interested and alert for more. He read four first readers from September to November; learned to write creditably with his left hand; to spell any easy phonetic word; and did very good weaving with his left hand. On November 15th, Thomas was returned to the regular second grade with the little people whom he left last March. He has read two second readers and has acquired a knowledge of number combinations suitable to his age. He is proud to say that he is in advanced second grade.

THE PROGRESS OF PUPILS IN AN UNGRADED CLASS.¹

BY S. M. LLOYD and OSCAR A. ULLRICH, JR.,
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Introduction.

It has been found that in every large school system where the pupils are recruited from the general public, certain percentages are backward, feeble-minded, dull, or are retarded because of lack of opportunity. These types of children are a constant source of worry for the teacher and a waste of time and money to the state if they are kept in the regular grades, aside from being dangerous to the morale of the class in general.¹ These evils were greatly accentuated in Austin after the adoption of the compulsory law in Texas, which forced into the school rooms many children who expected to attend only long enough to satisfy the law. This law also brought back into the schools retarded children who had withdrawn because of inability to progress, or because of discouragement.

In the summer of 1916, the authorities of the public schools of Austin took steps to remedy these obstacles to the efficiency of the schools, by instituting three ungraded classes in different ward schools in the city. Special teachers were employed for these classes. It was hoped by this means to help those in need in the branches of study in which they are most deficient, to give them that which they need most, and then to restore them to their respective grades, or to advance them as rapidly as they were able to progress. Thus, instead of holding certain pupils back in a grade for being unable to make satisfactory progress in a certain branch of study, provisions were made to teach those branches that are absolutely essential for efficient citizenship.

Purpose and Method.

It is the purpose of this study to measure the progress of these ungraded classes considered as a single group. In order to secure an objective measure of the progress of the special classes, the follow-

¹ We are deeply indebted to Dr. Truman L. Kelley, Adjunct Professor of the Psychology of Education, University of Texas, for his valuable criticisms, encouragement, and suggestions.

ing standardized school tests were given: Trabue completion,¹ Thorndike reading,² Starch arithmetic,³ and Courtis arithmetic.⁴ The tests were given in two sets of equal difficulty with an interval of four and one-half months between them. The time interval marks exactly the period of a grade in the Austin schools. The first set of tests were given during the last week in October, 1916, and the second during the second week in March, 1917, with the exception of the Courtis arithmetic test, which was given a month later, due to a delay in the arrival of the test-sheets. This makes the interval between the tests five and one-half months instead of four and one-half: but it is not thought that the results are thereby vitiated; for in comparing the scores made by the special classes with the Courtis norms, we can take 11/18 of the average increase in scores of the normal children, and compare that with the increase made by the special classes. The Courtis norms were used for comparison because it was thought they are sufficiently reliable to warrant their application in Austin.

In the Courtis arithmetic test only the examples right were considered. The final score was obtained by adding the scores made on the four fundamental processes, addition, subtraction, multiplication, and division. In like manner, total scores were calculated from the standard scores given by Courtis in Bulletin Number Four, page 48. The score for each fundamental process was obtained by multiplying the score for speed by the percentage of accuracy.

For the other three tests, the norms for comparison were secured from normal Austin children in the grades 3A, 3B, 4A, 4B, 5A, and 5B. These particular grades were used because nearly all children in the ungraded classes fell within these grades, although they were much older than the average children in the respective grades. The final score for each grade was composed from those ward schools that ranked relatively high and low in scholastic standing, based on an unpublished survey by Mr. E. D. Jennings, so that the norm represents fairly the condition throughout the city. Different schools were selected for the different grades so that a representative set of norms was obtained for the city. This was thought necessary because the special classes were recruited from the entire city.

The tests themselves were given under carefully controlled

¹ T. L. Kelley. For Scoring Completion Test Language Scales—First and Second Tests. *Teachers' College Record*, Sept., 1917.

² T. L. Kelley. Thorndike Reading Scale Alpha 2 Adapted to Individual Testing. *Teachers' College Record*, May, 1917. P. 253. (See Table B, page 259, for scoring reading test.)

For original scales by Thorndike see An Improved Scale for Measuring Ability in Reading, in *Teachers' College Record*, Nov., 1916, and Jan. 1916.

³ A Scale for Measuring Ability in Arithmetic. *J. Educ. Psychol.*, V. 7, No. 4, April, 1916.

⁴ S. A. Courtis. Manual of Instructions for Giving and Scoring the Courtis Standard Tests. 1914. (See manual for the tests, series B.)

Bulletin No. Four. COURTIS STANDARD RESEARCH TESTS. 1913-16. Dept. of Co-operative Research, 82 Elliot St., Detroit, Mich. (See Bulletin, page 48, for data used in calculating norms.)

conditions. All disturbing factors, such as fatigue, tendencies to copy, influence of teacher, and the like were guarded against.

The results of the tests of the ungraded classes were supplemented by a personal investigation of each special case with regard to development and advancement, based on the judgment of the teachers. The results of the two methods were then correlated and compared.

Results of Tests.

The following tables give the results of the school tests.

TABLE I.—AVERAGE SCORES AND AVERAGE INCREASE MADE BY SPECIAL CLASSES.

Grades	Average Age at Time of First Test	COMPLETION			READING			STARCH ARITH.			COURTESY ARITH.		
		No. of Pupils	First Test	Second Test	No. of Pupils	First Test	Second Test	No. of Pupils	First Test	Second Test	No. of Pupils	First Test	Second Test
2A.....	13.0	2	3.07	3.88	3	4.17	4.20	4	2.50	1.75			
Av. increase in scores...			.76			.03			-0.75				
3B.....	12.6	4	4.68	5.52	3	3.35	4.89	4	3.50	1.00	2	.50	.50
Av. increase in scores...			.84			1.54			-2.50			.00	
4A.....	15.5	3	4.39	4.92	2	3.95	4.10	3	3.33	.33	1	1.00	.00
Av. increase in scores...			.53			.15			-3.00			-1.00	
4B.....	13.4	3	6.59	7.17	3	5.81	6.30	3	5.66	9.33	1	3.00	4.00
Av. increase in scores...			.58			.39			3.67			1.00	
5A.....	14.9	1	7.00	7.50	2	6.02	5.57	2	6.00	4.50	1	9.00	9.00
Av. increase in scores...			.50			-0.45			-1.50			.00	
5B.....	15.1	3	7.13	6.57	3	5.61	6.23	3	2.30	6.66	2	8.00	8.50
Av. increase in scores...			-0.56			.62			4.36			-0.50	
6A.....	15.1	5	7.44	8.00	4	5.65	6.66	5	7.80	3.40	4	10.50	10.50
Av. increase in scores...			0.56			1.01			-4.40			.00	
6B.....	14.6	2	5.50	6.25	2	4.98	4.98	2	0.00	1.00	2	7.50	6.00
Av. increase in scores...			0.75			.00			1.00			-1.50	

The average scores, as well as the average ages of the ungraded children, may not be considered very reliable; for in no case were more than five individuals involved, due to the fact that many had withdrawn because of sickness, work, and the like before the second examination was made. Out of fifty-five, only twenty-six were left for the second set of tests. This may explain, in part, the irregularity of the increase in scores from grade to grade. The average ages, too, are only approximate, for the different tests both for the normal and the ungraded children, because in many cases a different num-

PROGRESS OF PUPILS IN AN UNGRADED CLASS. 279

TABLE II.—AVERAGE SCORES AND AVERAGE INCREASE FOR GRADES FOR NORMAL CHILDREN IN AUSTIN SCHOOLS.

Grades	Average Age at Time of First Test	COMPLETION			READING			STARKE ARITH.		
		No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test	No. of Pupils.	First Test	Second Test
3A.....	9.1	31	4.73	5.48	33	3.89	4.40	33	3.54	1.03
Av. increase in scores...			0.75			0.51			-2.51	
3B.....	9.7	21	5.03	5.74	23	4.33	4.47	23	2.91	1.61
Av. increase in scores...			0.71			0.15			-1.80	
4A.....	10.5	36	5.73	6.43	36	4.96	5.11	35	4.90	3.23
Av. increase in scores...			0.70			0.15			-1.68	
4B.....	11.3	44	6.66	6.92	44	5.06	5.57	46	5.17	5.00
Av. increase in scores...			0.26			0.49			-0.08	
5A.....	11.5	53	7.40	7.84	51	5.85	6.45	50	7.50	6.53
Av. increase in scores...			0.44			0.60			-0.96	
5B.....	12.0	33	7.55	7.92	33	5.96	6.61	33	7.73	7.08
Av. increase in scores...			0.37			0.65			-0.75	

TABLE III.—COMPARISON OF INCREMENTS, OF INCREASE OF NORMAL AND UNGRADED CHILDREN.

	AGES AT TIME OF FIRST EXAM.			COMPLETION		
	Normal	Ungraded		Normal	Ungraded	
Average age.....	10.9	14.2	Increments.....	0.51	0.49	
Median age.....		14.4				
Number of pupils....	220	26		318	23	
	READING		STARKE ARITH.		COURTES ARITH.	
	Normal	Ungraded	Normal	Ungraded	Normal	Ungraded
Increments.....	0.45	0.51	1.13	0.80	3.96°	-0.31
Number of pupils....	220	23	220	26	*	13

* See Bulletin Number Four, COURTES STANDARD RESEARCH TESTS, page 46. Increments were calculated from norms published in this bulletin, and is average increase from 3 to 8, both inclusive.

ber of pupils are involved. The discrepancy is, however, negligible; for in no case does the difference exceed 0.16 of a year.

The scores made by the normal children in the completion

and reading tests show a regular and consistent increment from grade to grade, as shown by table II. But in the Starch arithmetic test the scores are lower for the second examination than for the first by an average of 1.13. Yet when the scores for the different grades are considered separately for each set, a consistent increase is found from grade 3A to 5B, the scores ranging from 3.54 to 7.78 for the first set and 1.03 to 7.03 for the second set. Thus the norms for the second set are consistently lower for each grade than for the first, which seems to indicate that the second set is decidedly more difficult than the first.

A comparison of the increments made by the special classes when considered as a single group with those made by the normal children, as shown in table III, shows that the ungraded class is slightly below the normal in the completion test, slightly above the normal in the reading test, and considerably above the normal in the Starch arithmetic test. Two factors may have operated to make the difference in the last two tests in favor of the special classes. First, the ungraded pupils received special attention; their cases were analyzed, and the remedy applied. Second, reading and arithmetic were especially stressed in the ungraded classes, even to the total neglect of other branches if necessary. The latter explanation deserves emphasis in view of the fact that a smaller increment was made in the completion test than in the other three; for it shows that in real capability, as required by the completion test, the special classes did not improve equally well with the normal children. It is to be expected that if a group of normal children were drilled on the same subjects with as much care and persistency as were the special cases, they would show a relatively greater progress. If the difference in the average ages of the groups is also considered, a rather rapid progress in the fundamental school branches might be expected from the special classes.

Progress According to Teachers' Judgments.

STATISTICAL REPORT.

Enrolled early in term.....	55
Died.....	1
Withdrew to work.....	1
Withdrew because of sickness.....	2
Withdrew to other schools.....	6
	— 10
Remaining in special room.....	45
Promoted to regular grade during term.....	4
Demoted to lower studies in special room.....	5
Doing work of one grade.....	15
Doing work of two or more grades.....	21
	— 45

Of the twenty-one who made more than two grades, two made three grades, three made four grades, and one made five grades. All who were promoted gained their promotion by more or less satisfactory work. Of the four who were promoted to a regular grade higher than the one they had previously attended, two covered partly the work of two grades in the ungraded room; one, the whole work of two grades; and one, the work of three.

Age-Grade Conditions.

In the following table are given the number of years by which the children in the ungraded class are in excess of the average of the normal child for the respective grades. This comparison is based on the Austin standard of February, 1917, which considers seven and one-half years the upper limit of the normal age for the 1A grade.

TABLE IV.

Number of years over age.....	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6+
Number of pupils.....	1	1	2	6	9	10	4	4	2	1	3

Two of the 45 remaining in the ungraded room were eliminated because their age could not be determined. The improvement of the twenty-three who made more than one grade, is shown in the following table, the age-grade conditions of the others remaining the same.

TABLE V.

Number of years over age.....	0	$\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$
Number of pupils at beginning of term.....	0	1	0	3	6	6	3	2	2
Number of pupils at end of term.....	1	1	2	8	6	2	3	0	0

At the beginning of the term, four pupils were four and more years over age; and more than half the class, more than three years. But at the end of the term, none were as much as four years over age; and over half of the class, less than two and one-half. This table plainly shows a good record for four and one-half months' work with these pupils.

Correlation of the Results from the Two Methods.

1. *By groups.* The development in ability of the boys and girls who made more than one grade, as shown by their increase in

scores on the standardized tests, does not tally with their scholastic achievement. We have records of both sets of tests for 13 in the completion, 14 in reading, 15 in Starch arithmetic, and 8 in the Courtis arithmetic test. The average increments in scores for the pupils are compared with the normal in the following table:

TABLE VI.

	COMPLETION	READING	STARCH ARITH.	COURTIS ARITH.
Average increase for ungraded.....	0.40	0.55	-0.46	0.38
Austin normal increase for one grade...	0.51	0.45	-1.13	3.98*

* See Table III, footnote.

This table shows a real increase in ability approximately equal to that of one grade in the reading and completion tests, a much smaller falling off for the ungraded class in the Starch test, and an exceedingly poor showing for them in the Courtis test.

The poor showing on the Courtis test may be explained by the fact that this is a speed test. It was the only speed test used. This probably accounts for the peculiarly poor initial and final showings of the ungraded children, who were probably put into the ungraded class because of slowness. Speed was not their *forte*.

The increments in the reading and completion tests could be passed without comment if the pupils had gained only one grade; but since they made on an average two and one-half grades, the teachers seem to have promoted them unwarrantably. However, it must be remembered that these tests measure ability rather than quantity of knowledge. Moreover, when a pupil in the ungraded room covers the work of three grades in one term, it does not mean that he does all the work required of a pupil in the regular grades. The teacher requires of him only the essentials of a subject; he is deprived of the practice and continued handling of each phase which the normal pupils enjoy.

A group of eight who made only one grade during the term, present the average increments shown on p. 283. The average of this and the foregoing group are included in this table. The Courtis figures are omitted because only two took the test out of the group of eight. The number of pupils for the tests in this group are: completion, 7; reading, 5; and Starch, 8.

The norms used for the group of eight are the average increments for the 3A, 3B, and 4A grades; because these pupils were all in these grades.

TABLE VII.

	COMPLETION	READING	STANDARD AVERAGE
Ungraded.....	0.86	0.35	-2.63
Norms.....	0.74	0.28	-1.88
Average of both groups—ungraded	0.56	0.49	-1.21
Norms.....	0.51	0.45	-1.13

2. *By individual cases.* (1) O. L. was 12 years old and in the 3B grade. For some reason he had been unable to attend school continuously in the past. His work was steadily successful in the ungraded room, and at the end of the term he was promoted to the regular 4B grade, where he continued to do thoroughly good work. The table that follows gives his scores in the standard tests, first in the ungraded room and then four and one-half months later, when he was in the regular 4B grade. The norms derived from the tests of Austin pupils are given just below his scores for the purpose of comparison. An examination of this table shows that O. L. made a very healthy and appropriate improvement. His improvement in reading is wonderful, much poorer than the regular 3B at first, and better than the regular 4B on the second test. The improvement shown in the fundamentals of arithmetic is not as good as would be expected of a boy of his general ability. His case, together with the general showing of the ungraded room in this respect, indicates that it is advisable for the principals to inquire into the facilities afforded for drill and, if the teachers of these classes cannot find sufficient time, to make arrangements to supply the help needed.

TABLE VIII.

	GRADE	COMPLETION	READING	STANDARD	COURTESY
O. L.....	3B	5.33	2.65	6.00	0.00
O. L.....	4B	6.05	3.01	-6.00	1.00
Norms.....	3B	5.08	4.32	2.91	6.73*
Norms.....	4B	6.92	1.25	2.18	19.71*

* Approximately only. Norms for Courtesy are for grades 3 and 4. Figures between and to the right of the regular scores show the average increase made from lower to higher grades.

(2) Case E. T. E. T. was almost 15 years old, and had received small school advantages because of living in an isolated community. He covered the essential work of five grades in commendable manner, and was promoted to the junior high school in February. We have

nothing higher than the 6A norms with which to compare his 7A scores. The increment shown in reading is much larger than that shown by any regular grade above 4A, practically as much increase in ability as was shown by the regular pupils during a year of 4B and 5A school work. The unusually large increment in his scores for the completion and Starch tests shows that the ungraded class was indeed a class of opportunity for him.

TABLE IX.

	GRADE	COMPLETION	READING	STARCH	COURTIS
E. T.....	4B	6.00	5.98	1.00	3.00
		2.00	0.62	9.00	1.00
E. T.....	7A	8.00	6.60	10.00	4.00
Norms.....	4B	6.66	5.06	5.17	17.43*
Norms.....	6A	1.26	1.61	1.86	6.38*
		7.92	6.69	7.03	23.82*

* Approximately only. Courtis norms are for grades 4 and 5.

(3) Case R. J. This pupil, over 15 years old, was in the 6A grade, a dull boy whose previous teachers said that he could do nothing. His term grades beginning with the 3B grade were low; he had failed in 5B and 6A. He did acceptable work in 6A and 6B studies during the term of the ungraded class, doing the best arithmetic work in the room. He was promoted to the junior high school at the end of the term.

TABLE X.

	GRADE	COMPLETION	READING	STARCH	COURTIS
R. J.....	6A	6.75	6.07	8.00	19.00
		0.65	1.83	7.00	5.00
R. J.....	7A	7.40	7.90	1.00	24.00
Norms.....	5B	7.55	5.96	7.78	30.14*
Norms.....	6A	0.37	0.65	-0.75	4.82*
		7.92	6.61	7.03	24.96*

* Approximately.

The 5B norms are used in order that we may compare his growth in ability with the normal growth during the term; for we have no norms higher than 6A. The Courtis norms, however, are for the sixth and seventh grades, respectively, with an interval of one year. These figures tell an interesting story of mental awakening and growth. The increase in ability to grasp the meaning of the printed page is shown by a score increase of 1.83. This increment is greater than the sum of the increments shown by normal pupils in grades

4A to 5B inclusive, representing two years of school work. The completion test increment is more than the average grade increment. His initial and final scores in the Courtis test are not identical with Courtis' standard for the sixth grade; but the increment is greater, although the ungraded class represents five and one-half months' work while the norm represents nine months' work.

(4) Case M. B. This boy, nearly 15 years old, has been a puzzling problem for several years. His term grades from 3B up have been the lowest possible passing grades, evidently raised as high as the teachers' conscience and judgment would allow. He failed in 6A. When sent to the ungraded class, he soon dropped back to 5B work with one 6A study. He was found to be nervous and exceedingly slow.

TABLE XI.

	COMPLETION	READING	STARCH	COURTIS
M. B. First test.....	6.00 0.50	5.00 0.66	0.00 1.00	2.00 1.00
M. B. Second test.....	6.50	5.66	1.00	3.00

These scores show an appreciable increase in ability, and judging by them it seems fair to say that the term's instruction was well worth while. The scores, however, are low. The normal 4B scores for the first and second tests in reading are 5.08 and 5.57. This indicates that the boy's ability and growth was almost equal to that of a 4B pupil.

His scores in the completion test place him between the 4A and 4B grades. His Courtis scores are lower than the standard for the third grade by over one-half. His Starch scores are also lower than the 3A average. His teacher does not think that the boy is feeble-minded, and reports that his work during the second term was more satisfactory than during the first. He was promoted to the junior high school in June. Cases like those of M. B. and R. J. should be caught early, and put in charge of a special teacher while still in the lower grades.

(5) Case W. M. This pupil is a true defective, 18 years old. The special teacher put him in 4A studies, and at the end of the term started him in 4B work. A gratifying improvement was shown during the first term; but it was reported that during the second his work was poorer, and that there was nothing further the school could do for him. The table shows a real improvement in ability in the reading and completion tests, though the scores are low.

Our ungraded classes at present are not fitted to handle such cases. W. M. really belongs in an institution for defectives.

TABLE XII.

	COMPLETION	READING	SPACING	COVERING
W. M. First test.....	2.50	2.18	0.00	1.00
	0.50	1.52	0.00	1.00
W. M. Second test.....	3.00	3.70	0.00	0.00

(6) Case L. J. While the ungraded classes are in no sense disciplinary classes, still several pupils found their way into them whose backwardness was due to moral delinquency rather than mental dulness. Not all of them showed the gratifying improvement of L. J. This boy was almost 14 years old when in the 4B grade. He was shift, untruthful, and a troublesome truant, with poor mental control. Toward the end of the first term he improved in character, and during the second term he was doing good work in the regular 5B grade. The last time he played truant was on the afternoon the president of the school board had made him a present of a much needed suit. Pride and delight caused the relapse. The principal rejoiced with him and pardoned him.

Conclusions.

A consideration of the survey shows that the ungraded classes in the Austin schools have carried out with success the purpose for which they were established. The regular classes have been relieved of the burden of these pupils who would have required special attention. The grading and teaching have been individual, as shown by the different rates of advancement. To more than one-half of the pupils, the special class was a class of opportunity, for they gained one or more grades. The same thing is true even for most of those who succeeded in making only one grade during the term; for they would probably have failed to make one grade in the regular class. That the ungraded class has been largely a restoration or adjustment class is shown by the fact that out of forty-five remaining during the first term, twenty-two were put into the regular grades that were more suitable to their age and maturity.

It must, however, be borne in mind that the special class does not, on the whole, revolutionize the mental development of the children; but according to the standardized tests, it does show a definite, material improvement. Such development is well worth while,

but it is on the average not as great as the scholastic advancement to which the teachers subject their pupils.

Summary.

1. Children in the ungraded class were, on the average, three and one-half years older than the normal children in the regular grades.

2. The ungraded children improved in ability by nearly one grade as shown by the increments on the completion test, when compared with the norms.

3. The same children made slightly greater increments on the Thorndike reading test and much greater on the Starch arithmetic test than did the normal. The good showing in the Starch test may be due to intensive drill.

4. In the Curtis arithmetic test, the special class made exceedingly poor initial and final scores, which is perhaps due to the fact that this is a speed test. The ungraded children are slow, and probably for that reason put in the special class.

5. According to the teachers' judgments as evidenced by their promotions, the pupils were usually placed higher than the results of the standardized tests warrant.

CLINIC REPORTS.

XXV

By the series of tests now in use, it is possible not only to determine the approximate degree of general mental deficiency, but frequently to detect also the specific major incapacities which must be taken into account in making a prognosis of further development, either with or without orthogenic treatment.

The examination of Lida in May, 1917, is a case in point.

A general diagnosis of mental deficiency could have been made merely from her physical appearance. She was eleven and a half years old, a slight girl, a little under height, with a head no larger than that of a small five year old child (49.9 cm.), covered by a dirty scalp, and straight fair hair that was ill-kept and lifeless. Pale blue eyes popped out of her yellow face. An open mouth, which the first finger of her left hand constantly pulled down at the corner, showed a small tongue, and an underdeveloped mouth cavity. Even the hands, with dry, flaky skin and fingers short and stubby, particularly above the knuckles, distinctly betrayed her imbecility.

The brief history, too, given by the mother, was suggestive of feeble-mindedness: severe marasmus for the first eighteen months, slowness in walking and talking, followed by inability to get on in school, and finally, Lida's recent demotion from grade 2B to "some sort of a testing class," which was the immediate occasion for the mother's anxiety and complaint.

A specific and analytic diagnosis, however, could be made only on the basis of the mental tests. These measured the degree of the deficiency, determined the presence of at least a minimum of most of the mental capacities essential to development, and detected a few grave specific incapacities.

An initial performance of the peg board in 2 minutes, revealed a very slow rate of movement, a fair co-ordination of eye and hand, persistent concentration of attention apparent in the steadiness and system of her performance; and the work with the colored pegs showed good visual discrimination.

The formboard, completed in the time it would take a six year old girl to do the work, brought out the same factor of low rate of movement, together with feebleness in distribution of attention, as well as evidence of a fair amount of space perception, analytic attention, and the ability to imitate roughly the movements of the examiner in placing the blocks, but not the purpose which was the motive behind the movement, *i. e.* ability to imitate within the narrow range of her understanding.

The Witmer cylinders, while emphasizing the deficiency in distribution of attention, indicated the presence of genuine persistence in that Lida worked steadily for nine minutes before giving up the task as a failure; and the ability to profit by instruction, in that, after a few minutes of instruction and practice, she completed the test in 93 seconds.

The Healy construction puzzle A, which she worked on for five minutes before giving up, and after a single showing of the completed arrangement, solved three successive times, revealed the same assets of persistence and trainability, as well as the capacity to attend analytically to a visual image, and the lack of normal ingenuity and constructiveness.

Her final success, in spite of slowness and difficulty, in reproducing from a copy patterns with the design blocks, gave further evidence that she possessed

a certain low degree of analytic attention, perception of physical relations in simple form, and the ability to imitate.

A memory span of 5 digits forward, and 3 digits backward, indicated sufficient trainability of memory for some progress in learning.

The Healy completion test, while it emphasized again the poor distribution of her attention, and showed, by her repeated failure to remember how to take out a block, an unretentive memory, brought out a certain meager associability of images and constructive imagination in that she was able to give acceptable reasons for her seven correct placements, and reasons that satisfied her for the three incorrect ones; "That rooster's tumbling out of that cage." "That rooster's jumping to peck that ball." "That bird is flying away from the boy."

The Terman-Binet tests fixed her mental age at 7 years, 10 months, with a retardation of 3 years, 8 months, and an I.Q. of 68. Her successes and failures in this series showed clearly the ability to understand, discriminate, compare, and define at an 8 year level, but conspicuous failure to do so at the next higher level. On all tests dependent on retentive memory, such as naming the days of the week, or the months, she either succeeded with obvious effort, or failed after straining her mind as though she had known them and was trying vainly to recall them.

Evidence that Lida was, indeed, educable was furnished by the fact that, in spite of an unfavorable environment, and the unspecialized treatment of the public schools, she seemed to have reached the level of a first grade pupil. She read satisfactorily from the Aldine first reader, reproducing what she had read by repeating the sentences, with her good immediate, but unretentive, memory, almost word for word. She spelled at about the same level, and learned to spell back from a single repetition, but a few minutes later could not recall it. In number work, she knew most of the addition, and a few of the lower multiplication, combinations; could add two numbers of three figures with carrying, subtract two numbers of three figures if no borrowing was involved, multiply one number by another occasionally. but could do no long multiplication, or long or short division.

The mother's statement that she had taught Lida the multiplication tables over and over again till she seemed to know them perfectly, but that always in a few days she would have forgotten them, corroborated the suspicion of a grave defect in retentive memory.

The series of tests taken together, presented a picture of a mind in which all capacities were seriously below normal, but present in sufficient quantum to insure the ability to profit by instruction within strict limits set by her major defects in distribution of attention and memory retentiveness.

It was possible, therefore, to diagnose Lida as a middle grade imbecile. Her school efficiency is about that of a first grade pupil. She would profit by work in the special class of the University Summer School, a public school special class, training at the Elwyn Training School for the Feeble-minded, or, in default of the above, return to the first grade.

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XXVI

Myra, a rather large child of three years, with her head on one side, and a peculiar expression of the mouth, was a deaf-mute. She has been sent to the Clinic because a social worker at a hospital wished her to learn to speak. At her first visit to the Clinic it was recommended that she be sent to a private school

for the deaf before she was four years old, in order that she might be taught speech. The diagnosis was given that her mentality was apparently normal for a deaf child. She was returned from the school as unteachable. They had wanted to dismiss her within a week of her admission, but had not done so, because the Clinic had requested further experimentation. It was desirable to make a re-examination to determine what should be further recommended. There was no significant history, either in regard to disease, birth, or family.

Her performance with the pegboard was qualitatively poor. The pegs were placed slowly, with poor coördination and without any perceptible method or planfulness. On the second trial she improved to some extent, and her pegs were placed with some system. She filled a row before proceeding to the next row, but even here she did not fill the whole row in order.

In the formboard test it was evident that she used the trial and error method in the first trial. There was almost no form perception shown. She completed this trial in 146 sec., but when she came to the second trial she stopped at 270 sec., without placing the blocks. In further trials she showed no great improvement. Her manner of handling the blocks was very poor, and her recognition of the relationship between the block and the recess was feeble. Although this was the predominant feature of the test, yet there were times when she would take the wrong block away, and using the other hand, would fill in the right block with precision. This happened so frequently that there was some question as to her distribution of attention, and it seemed possible that the poor quality of her performance could be explained as a lack of correct distribution of attention. It is possible that her deafness can be accounted for in the same way,—that is to say, she may receive the sound stimuli through the proper organs in the normal way, and yet her attention may not be drawn to these stimuli.

At this point there was a return to the pegboard test, to determine her ability to distinguish colors. The idea of completing a single row with a given color was not too complicated for her, but she did not get the idea of doing it with blue or green. Moreover, when several rows were started for her, she could not grasp the idea of completing each with its own color. Experimentation with the colored cubes showed that she could distinguish blue and green with these blocks, and it is a question whether she was unable to distinguish the blue and green of the pegs, or whether it was merely another example of poor distribution of attention. Myra took some time to get by imitation the idea of piling two blocks of a given color, but at last she was able to do this.

Her performance with the Montessori cylinders showed a low degree of intelligence. When she had placed all but two of the cylinders correctly, that is, when she had two of them transposed, she could not solve the problem. After much experimentation, it seemed possible that she had really learned this; but it was a new problem, and though very simple, it seemed decidedly too complex for her.

The most pronounced features of the case were the slowness with which Myra learned, her lack of imagination, and of intelligence,—that quality which would enable her to solve a new problem. On the whole it would seem that she had the mental development of an eighteen months old child. This estimate of her mental level does not make any allowance for the possibility that she has been deaf all her life, and yet it seems that if she had been merely deaf, and of otherwise normal mentality, her improvement at the school would have been more rapid.

One of the most interesting elements of the case was the irregularity of

Myra's performance. At one moment she would seem very dull, and at others she would do things that indicated a superior mental development.

Before she left, Dr. Witmer recommended that a Wassermann test be made, to be sure that her underdevelopment was not due to syphilis, and he suggested that the mother bring her back again in a year to see what could be done toward putting her in an institution. He graded the child as a low grade imbecile (Barr classification), or lower.

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REVIEWS AND CRITICISM.

The Exceptional Child. By Maximilian P. E. Grossmann. New York: Charles Scribner's Sons, 1917. Pp. xxxiii+764.

In the foreword Dr. Grossmann states that "the purpose of the book is to give a perspective of the entire situation, and to suggest ways and means of coping with the problem in its various aspects." Again he says, "It has been my endeavor to write the book in simple language and in a style which will appeal even to readers who have but a modicum of scientific training and vocabulary." Both of these objects have been accomplished. The book is encyclopedic in scope. Nearly every chapter could be expanded into a large volume, yet the material is outlined rather than condensed to a technical statement of present knowledge of the topic. The result is a book which gives to the general reader a very fair view of the problems of this branch of applied psychology, and to the student an incentive for intensive work along one or more specific lines of research. A great aid to the second type of reader is the bibliography which, while not by any means complete, covers twenty-seven pages.

The body of the book is divided into three parts. Part I treats of the "Problem of the Individual Child." In eleven chapters the author presents not the "problem" but the "problems" involved in the classification and treatment of children. The titles of the chapters show the extent of the scheme. The educational problem in general, the problem of efficiency, different civilization levels in modern society, classification and terminology, the normal child, potentially normal children, exceptionally bright children, psychopathic disorders and psychopathic constitutions, the feeble-minded group, juvenile delinquency, sexual perversion, and prostitution are the topics touched on in this part. Perhaps the best of these is the one on "different civilization levels," and the treatment of "the feeble-minded group" is like it in sanity and breadth of view.

In Part II "The Problem of Clinical Research and Diagnosis" is presented. This has to do almost entirely with tests and measurements with their standardizations. The presentation and criticism of the Binet Scale of Intelligence are excellent. One sentence sums up the fatal defect in the scale from the standpoint of educational diagnosis. "The Binet scale fails to reveal the *quality* of a child's mind, and after all it is this quality alone which is of educational value, and the determination of which helps us to make an educational diagnosis and prognosis." The chapter, "Schedule of Tests" mentions and illustrates a number of well-known tests used by the author in his own work. Here he would seem to have fallen into the error which he disavows elsewhere. Almost any intelligent teacher can give these tests, but how? And what use are the results

after they are given? On page 275, he says, "The technic and routine should be so simplified that intelligent and well-trained school superintendents, supervising principals and even teachers may be found to be willing and capable of receiving special training in conducting their local educational clinics." But, alas, these people are not "well-trained" in the basic principles of psychology necessary to give and understand the tests, nor are they willing to get the special training, and the author adds "Naturally the results of their testing can be only tentative, but it will help them to differentiate between children of different types, and to make them desirous of referring cases to psychological and medical experts and clinics for further advice." So it would if the ideal situation suggested by Dr. Grossmann could be realized. If this book stimulates the demand for a real knowledge of psychology by candidates for certificates as teachers and supervisors, it will do a great work. The danger is that the possession of the book may be thought a sufficient equipment for diagnosing and prescribing for the exceptional child.

Part III, "The Problems of Prevention, Adjustment and Organisation," is almost a treatise on education. A chapter points out in a general way the lack of legal provisions for exceptional children. Other chapters discuss the kindergarten, home life and home education and the provisions for exceptional children in schools and institutions. The criticisms of these provisions are well founded and constructive. Perhaps the best chapter is that on "The Training of Teachers." "True teaching means preparing a child to understand the world in terms of his own experience; placing him and his conduct in harmony with a social body, so that he may become a constructive factor in community life and avail himself of the opportunities for right living which are offered to him by his fellow men." To this end the teacher should be trained to know children. Psychology, sociology, physiology and hygiene are the basic studies. "Student teachers should be given ample opportunity of practical experience with children". . . . "Compared with the problems of this practical child psychology the problems of subjects and methods will seem almost insignificant."

Not the least interesting part of the book is the "Medical Symposium," a series of twenty-five articles on special aspects of the problem by eminent specialists. These deal with causes, effects, and treatments of various departures from the normal anatomy, physiology and psychology of children; and should prove very helpful to the student of child psychology.

While, as the author explicitly admits, the book is open to criticism in places, on the whole it is very suggestive and is written from a sane, practical point of view. The danger has been pointed out above, but that is not the fault of the book. It is rather the weakness of teachers who are satisfied to know something in general about children instead of being eager to know and understand the individual child.

H. J. H.

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